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*Illustrated.

The New Haven's Electrical Tieup

The interruption of traffic on the New York division of the New York, New Haven & Hartford by the snow and ice storm of December 13, which was briefly reported last week, was very serious for 72 hours and trains continued irregular for the rest of the week. Passengers and prospective passengers have entered a multitude of complaints, but it is impossible even now to explain more than a fraction of the reasons for the delays to trains that were run and the omission of many trains that ought to have been run but were not; for the chief operating officer himself (at the time this paper goes to press) has received no full or detailed reports of the causes of the troubles. This is because of the scanty means of communication, and, more particularly, because every man and every officer who could do anything toward restoring the electrical wires has until now expended all his energies on the outdoor work. The electric power was unavailable for about 36 hours because of the breaking at many places of the "control" wire, the wire by which the load despatcher at the power house keeps in touch with the different sections of the line. This "control" is as important as the transmission itself; but the conductor was not so strong, physically. The steel structure, the catenary and contact conductors and the transmission wires were all of sufficient strength and withstood the snow, sleet and wind (the wind in many places blew at 70 miles an hour); except that the transmission wires failed at three places, probably from electrical disturbances; and the "control" wire failed because the load of snow and ice was too great for the physical strength of the 300-ft. spans. Those signal wires which were on wooden poles went down on long stretches of the road because of excessive weights on wires, and failures of poles; and signal wires on the steel structures went down from overweight, the same as the "control" wire above mentioned. All telegraph and telephone wires were out of service because of these same general causes, and the telephone company's lines as well as the Western Union wires at the same time failed in all directions. On a 12-mile line of the New York Telephone Company, a few miles west of the New Haven road, every pole fell. The New York division is operated largely by electric power, and there were only 25 steam locomotives (all freight engines) available on the division. Other divisions adjacent, by reason of the snow on the tracks and the delays due to the loss of communicating wires, needed all their engines and could lend none to the New York division. This, in brief, seems to be the explanation of the small number of trains in service on Tuesday and Wednesday. Only by borrowing linemen from foreign electric establishments and by getting the co-operation of a large number of Western Union men was the road able, by Thursday, to gather a force of 250 linemen; and these 250 were kept at work, as many hours as they could endure, until Monday of this week.

New York State Passenger Fares

The Austrian reply to the United States assumes no knowledge on the part of that government of the negotiations which the United States had with Germany in regard to the Lusitania. The New York Public Service Commission, Second district, has suspended for three months, pending a hearing, the proposed increase of passenger fares from 2 to 2½ cents which was to have become effective January 1. The press bureau of the commission gave out the statement that "no date has yet been set for this hearing, but it was stated at the office of the commission that the hearing would be held as soon as the representatives of the railroads could prepare the proof which it will be necessary for them to adduce on the hearing and with due regard to the convenience of the number of civic bodies and officials," etc. Volumes of evidence have been submitted in various cases showing the cost of passenger service. The United States Supreme Court has decided that each class of service must be permitted to earn a return on the capital invested in the utilities devoted to this service; the Interstate Commerce Commission has granted the western passenger fare increases, but the New York State Public Service Commission is going to allow three months or more for the preparation of proof *and* the convenience of civic bodies, etc. No one can criticize the commission for proceeding in an orderly way to treat the New York state passenger fares on their own merits, but the commission is an administrative body which, unlike the Austrian government, ought to be cognizant of what is taking place in a field in which it is specifically engaged in work. Is it not a bit misleading to blame a three months' delay on the necessity for the roads to prepare proof? The roads probably made a very careful investigation long before the increase was decided on. The proof necessary to convince a fair and intelligent commission is probably already prepared. Whether it be sufficient to convince the civic bodies and officials whose convenience the commission also wishes to meet may be another question.

A Problem in Yard Operation

The strike on the Belt Railway of Chicago last week involved a question which is raised nearly every time a new classification yard is placed in operation. Clearing yard, which was placed in service last July, is located in the outskirts of Chicago about six miles west of the old yard of the Belt Railway, which was adjacent to a well built-up residential section. With the opening of the new yard at Clearing, the men demanded that an employees' train be run at frequent intervals to take them to and from work, and the continued refusal of the road to install this service permanently precipated the strike. Whenever a road builds a new classification yard it is obviously necessary to locate it beyond the settled areas, where sufficient land can be acquired at reasonable prices and where there will be room for further expansion. Whenever such a terminal is placed in service the employees working in the yard and the train and enginemen running out of it have the alternative of moving near the new terminal or of finding some means of getting to and from work conveniently. It usually becomes necessary for the employees to move to the new location. To assist their men during the period of readjustment, a number of roads have put on employees' trains temporarily with the result that in many cases the employees have made little or no effort to relocate their homes, depending on their ability to persuade the company to keep the trains in service. Because of the difficulties which have arisen when such trains have been taken off, the roads have in numerous instances refused to put on such trains at all, leaving their men to get to work the best they could rather than face the difficulty in removing these trains after they have once been started. While local conditions differ from place to place, and while it is recognized that a temporary hardship is created for the employees involved whenever their place of employment is moved away from the vicinity of their homes, their action in Chicago and elsewhere is a strong deterrent to any co-operation on the part of the railroads.

COMFORTING DELAYED PASSENGERS

DELAYING a hundred passengers a half hour may cause more ill feeling than can be counteracted by the highest grade of politeness in all the ticket offices on the road for a whole year, even though the delay may be due to an engine failure, a fallen brakebeam or some other simple accident which every one of the hundred passengers, on reflection, would admit to be practically unavoidable. This being so, J. B. Austin, superintendent of the Long Island Railroad, may not be far out of the way when he says, in a circular to stationmen and trainmen, that "nothing will contribute so much to the popularity of the road as the giving to all concerned prompt information as to cause and probable duration of delays." This circular is so well worded that it deserves to be copied. We started to italicize the most important words in its reproduction elsewhere in this issue, but gave up the attempt because there were so many of them. We will, however, note a few of them here.

"Comfort *and* Convenience." Making passengers comfortable is only one feature. Consulting their convenience may mean taking time, for the passenger's benefit, to study the time tables of a rival railroad, or sending a brakeman to carry a woman's hand baggage to the other road's station. Comfort includes a mind at peace. "Suitable Announcement." How many announcements of delay are unsuitable; falling far short of giving all the information that is reasonably desired! "Trainmen are to freely answer all questions . . ." What a very high standard, as compared with what is heard on passenger trains every day! Many brakemen give answers which are so brief as to seem to indicate that they value their words at a dollar each. "Trainmen will only be expected to do the best they can." Allowing the passengers to be the judges, that will be at least a hundred per cent above the usual average. And, whether they are reasonable or unreasonable, the passengers must be allowed to be the judges. Who can make it otherwise?

"The train despatchers will keep in touch with the agents." This is one of the chief sentences in Mr. Austin's circular. If the Long Island is like most roads it is the sentence from which the most definite improvement may be expected. Educating brakemen is a slow process. It is hard to find many roads (or divisions) where the force of passenger trainmen does not include a considerable percentage of men whom the trainmaster looks upon as rather poor material for educational processes. The Long Island itself must have its full share of educational perplexities, because of the great reduction in the volume of passenger service on its lines in the Autumn and the equally heavy increase in the Spring. To maintain efficient passenger service on that road is a great accomplishment. But to keep passengers always well informed, through the medium of the train despatcher and his telephone lines are running to every ticket office, ought to be a simple problem. Simple, because there are comparatively few men to deal with and they are (or ought to be) men of intelligence and alert minds. But this problem, though simple, has been much neglected. We could name roads where train delays are very poorly advertised; where passengers have numerous grievances—many of them rather small grievances, it is true—which alert train despatchers could make unnecessary.

The station agents must do their part, of course. If stationmen were more wideawake to anticipate passengers' wants they could enhance the despatchers' efficiency by asking them more questions—provided, of course, that the superintendent employs enough extra pairs of eyes to make sure that the despatchers give suitable responses to agents' questions. When despatchers are rushed with work they are liable to neglect passengers' convenience, with some feeling of justification, and the superintendent needs to step in and straighten matters. Again, it is to be remembered that the shortsighted and lazy despatchers, and those who are overbearing in their attitude to agents, are not all dead.

Is there not some way to excite rivalry in this matter among despatchers, and also among agents? Prizes for excellence are hardly practicable; and even the prize of mention by name in "efficiency bulletins" sometimes overshoots the mark, by magnifying "merits." The man who is inclined to blow his own horn must not be encouraged, surely. But, in the nature of the case, there must always be, in any body of men, some who excel; and it is one of the plainest duties of the officer to see that these men's methods are made known to others who ought to pattern after them.

Whatever the solution of the problem of perfect satisfaction of passengers' wants, it is certain that no very marked success will be achieved except as superintendents, trainmasters, despatchers, agents, conductors and brakemen give the subject a lot of earnest and business-like attention.

MILLIONS FOR AUTOMOBILES BUT NOT A CENT FOR RAILROADS

THE Interstate Commerce Commission may not have sold out to the railroads, because the railroads can hardly afford to buy luxuries these days, even if their credit is as good as Clifford Thorne says it is, but the commission must at least be working in cahoots with Henry Ford—take it from the Des Moines Register and Leader, against whose advice the commission has come to the astounding conclusion that passenger fares should be somewhat higher than those now prevailing in Iowa.

"Increasing railroad passenger fares to 2.4 cents a mile," it says, "is like handing the automobile manufacturers of the country $100,000,000. It will give enormous impetus to the movement, already well under way, to make each man furnish his own private means of rapid transit between cities, for it is the final step in giving the automobile a definite advantage in the way of cheapness."

This somewhat broad statement is based on the assertion that "two passengers in a light automobile, or four in a heavy car, can journey for less per mile than the 4.8 cents and the 9.6

cents, respectively, which parties so constituted will pay if they travel on the railways."

The Register and Leader's figures lack something of that specific quality which might be expected to characterize, say, a calculation in its own office as to whether copies of its paper which reach Chicago could be sent the more cheaply by mail or by automobile, but the advantage in favor of the automobile is seen in the fraction of a cent per mile which is to be added to the railroad fare. It may be possible to figure the cost of automobiling at less than 2.4 cents per mile, particularly if Clifford Thorne be allowed to censor the maintenance expenses and depreciation charges; in fact, we have heard that some thousands of Iowa farmers occasionally ride in automobiles in preference to paying only two cents a mile to the railroads. We have also heard of higher rates being paid, and without interference by either state or interstate taxicab commissions.

However, we see no reason why anyone in Iowa who really can't afford to buy a new car this year need forego for the present the benefits of personal transportation just because of four-tenths of a cent per mile. The Iowa legislature has not yet repealed the beneficent law which insures to present day Iowans, if not to their posterity, the blessings of liberty to buy a separate ticket at the state line for two cents a mile. It is not much more difficult to do this on a journey to or from the surrounding states of Minnesota, Illinois, Missouri or Kansas than to change a tire, for example. In South Dakota, of course, the rate is 2½ cents and those who have occasion to go back and forth between Iowa and that state would better buy a Ford, save another tenth of a cent per mile and declare a dividend.

On the other hand, there are some infinitesimal advantages in travel by rail as compared with the joys of furnishing one's own private means of rapid transit, particularly on a trip beyond the two-cent a mile radius. If the train is late one can write to the Register and Leader or file a complaint with the Iowa Railroad Commission, whereas if the automobile is late it is late. If nightfall overtakes the weary traveler en route, the Pullman Company will provide a bed for a consideration strictly regulated by a commission and no higher than would be charged in an unregulated hotel in Des Moines. We are not informed as to the make of the light automobile in which one can travel for less than 2.4 cents a mile, but the up-to-date Pullman car is provided with springs.

In comparing the cost of automobile and rail travel our Iowa contemporary has inadvertently omitted consideration of the first cost of the car. In the case of the railroads some of the cars, of course, were found growing on the bushes on the early land grants, and, therefore, the railroads do not expect their rates to cover any return on capital investment, but in the case of automobiles, as well as of gasoline, we had understood that the price usually included some modicum of dividend, the very idea of which is usually abhorrent to the Register and Leader. We do not know how it stands on the question of peace junkets.

If the Iowa automobile owners agree with this oracle as to the cost of automobile travel, it is surprising that they should allow the railroads to continue to compete with them for intrastate business. Why not either raise the state passenger rate or let the railroads discontinue their state passenger business, tax them on their interstate business for the benefit of good roads, for which the Register and Leader now sees an increased need, and turn the state railroad commission into a good roads commission? Reduce the local tax rates for road purposes in order to increase the revenue therefrom and if a railroad gets in the way of an automobile, elevate it. This plan need not legislate anyone out of a job. If road-building prove an uncongenial task for the chairman of the commission the legislature might pay him for regulating interstate rates and create a vice-chairman to take charge of the constructive end of the work.

However, if cheap transportation is really desired, the *Railway Age Gazette* has compiled some statistics of its own, which we may not be able to prove, but which we can confidently assert will demonstrate that it is cheaper to walk than to travel either by automobile or by rail, even within the confines of a sovereign state. If this discovery is worth $100,000,000 to the shoe trust, let the Register and Leader make the most of it.

IMPROVING RELATIONS BETWEEN RAILWAYS AND THEIR PATRONS

THE problem of railway regulation is losing none of its complexity or magnitude, but the recent annual report of the Interstate Commerce Commission contains indications of an improvement in many respects in the relations between the railways and their patrons. Since it was the unsatisfactory state of these relations which was responsible for the creation of the problem of regulation this improvement represents progress in fundamentals. The need for railway regulation arose principally from the controversies between the buyers and the sellers of transportation over the rates to be paid by the buyer for the service rendered by the seller, and most of the work of both the federal and the state commissions has had to do with one phase or another of this question.

The improvement to which we refer is manifested in the reduction in the number of such controversies. In the year ending October 31, 1915, covered by the commission's report, the commission received 964 formal complaints, a decrease as compared with the previous year of 190, and as compared with 1913 of 59. It also received 6,500 informal complaints, as compared with 7,880 the year before and 7,600 in 1913.

The commission says that the decrease in the number of complaints filed during the year has been more than offset by the complex nature of the cases that have been presented, and that the rate structures between various communities are now more often the subject of complaint than was the case in earlier years. This means that the cases involve not so much dissatisfaction with the amount of the rates as market rivalry between competing cities. The number of proceedings involving rates suspended by the commission was 199, a decrease of 4, and the number of cases in which the commission refused to suspend new rate schedules was 368, an increase of 157.

Moreover, the proportion of indictments for violations of the law returned against carriers to those returned against shippers, passengers and others was less than ever before. The report of the division of inquiry of the commission, which has to do with the investigation of seeming violations of the interstate commerce laws, shows that about 90 per cent of the matters investigated were disposed of without resort to the courts, and that the larger part of the field investigations made by the division did not disclose violations of law.

Of the 72 indictments returned during the year at the instigation of the commission, only 22 were against carriers or carriers' agents and 50 were against passengers, shippers or other interested parties. The indictments against railroads were principally for failure to strictly observe their tariffs and for granting to individuals favors or free passenger service, and while these cases receive wide publicity, the fact that the commission has caused more prosecutions of the patrons of the railways than of the railways themselves for violations of the laws is usually overlooked. Whether or not it is more blessed to give than to receive, it is true that not only during the past year but in every year but two since the commission's division of prosecution was organized in 1907 there have been more indictments of shippers and passengers for soliciting and receiving rebates, or other preferential treatment, false billing of shipments, filing false claims and for violations of the anti-pass act, than of the railways for giving favors.

The indictments for each year, as shown by the Interstate Commerce Commission reports, have been as follows:

	1915	1914	1913	1912	1911	1910	1909	1908	Totals.
Against carriers or carriers' agents	22	20	28	34	29	25	16	18	192
Against shippers, passengers and others	50	38	33	54	26	19	19	28	267
Joint indictments				5	7				12

As far as rebates are concerned there are always two parties to the transaction, the giver and the receiver, but much of the

increase in the proportion of indictments against shippers is accounted for by the practice of false billing of freight in order to secure a lower rate and the filing of excessive or fictitious claims for loss and damage, practices which in many cases the railways cannot prevent.

The commission also notes an improvement in the practices of the carriers in adjusting claims, showing that of 4,563,438 presented during the calendar year 1914, 96 per cent were adjusted, 50 per cent within 15 days after receipt, more than 65 per cent within 30 days, and all but 6 per cent within 120 days.

NEW SOUTH WALES GOVERNMENT RAILWAYS

THE annual report of the New South Wales Government Railways is always interesting because they constitute the most important railway system of Australia. The report of the chief commissioner for the year ended June 30, 1915, is especially interesting because of its indication that transportation conditions in the antipodes are subject to many of the same influences that exist elsewhere; that government ownership is no antidote for reductions in volume of traffic, or increases in wages and other expenses such as have been experienced in this country; and that it does not serve to prevent increases in capitalization and rates.

Following an increase in gross earnings in 1914 over 1913 of $4,827,224, and an estimate that the 1915 earnings would show a still further increase of $1,750,000, the volume of traffic was so reduced after the outbreak of the war in August that the earnings for the year actually amounted to $37,016,000 as compared with $37,627,000 in 1914, a loss of $611,047, or 1.62 per cent. Operating expenses were $25,812,247 as compared with $26,291,725 the previous year, a reduction of $479,477. The balance, after payment of operating expenses, was $11,203,996, as compared with $11,335,566 in 1914; but an increase in the interest on capital invested from $10,318,042 in 1914 to $11,317,384 in 1915 resulted in a deficit for the year of $113,388, as compared with a surplus of $1,017,523 in 1914. From the increased rates and fares put into effect on March 1, 1914, the earnings for the year benefited to the extent of $1,083,780, as compared with $361,263 in the previous year, when the higher rates were in operation for only four months. But for these higher rates the year's operations would have resulted in a larger deficit than that recorded.

The chief commissioner says in the report that the principal decrease in the earnings was caused by the comparative failure of the wheat crop and that there were also large decreases in the earnings from general merchandise, attributable to war and drought conditions, and from coal, coke and miscellaneous traffic. He also says that "when it became evident early in the year that the anticipated increase in earnings would not be realized, steps were taken to curtail the working expenditure in every possible way without impairing safety or efficiency. Unprofitable train mileage was reduced as much as possible and only absolutely necessary maintenance works were proceeded with." In November he made application to the court of industrial arbitration for the suspension of periodical advances in wages to salaried officers, engineers and firemen that had been awarded the year before, but the court dismissed the application. The additional expenditure during the year attributed to these advances was $568,114. It is also stated that the cost of materials used during the year due to advances in prices increased approximately $175,000. The train mileage for the year was 20,420,023, a reduction of 129,672 miles, the mileage of passenger trains being 9,647,652, of mixed trains 1,353,920, and of goods trains 9,418,451.

An appendix to the report shows, however, that the average number of men employed, 37,403, was 4,076 greater than for the preceding year, and although most of the increase was in the number employed on work charged to capital account the operating force was 414 larger than in 1914.

The interest requirements, which were $999,342 larger than for the previous year, include interest on money expended on work under construction during the year, which the commissioner says should be treated as part of the cost of the work and charged to capital, rather than to operation. But for the inclusion of this amount, he observes, the result for the year would have been a surplus of $149,036, instead of a deficit.

The balance after working expenses, available for the payment of interest, was equal to 3.6 per cent on the capital invested, as compared with 3.9 per cent in the previous year. This is referred to in the report as a "profit." The expenditure charged to capital account during the year amounted to $20,987,448, which increased the total cost of lines open for traffic on June 30, 1915, to $318,734,711 for 4,134.5 miles, or $77,094 per mile. In 1914, the capital investment was $75,048 per mile, in 1907, $62,917 and in 1888, $63,734.

Of the total earnings the passenger business contributed $14,145,924, a slight increase over 1914, and the freight business $20,442,297, over half of the freight earnings being derived from the merchandise traffic, and approximately one-fourth from the livestock traffic. The ton miles of freight carried amounted to 916,923,022, the average haul was 78.64 miles and the average earnings per ton-mile were 1.9 cents. The average haul on general merchandise was 89.68 and the average rate per ton-mile 2.78 cents. The average rate on coal and shale was 1.08 cents, on grain and flour .74 cents, hay, straw and chaff .72 cents, wool 3.92 cents and livestock 2.12 cents. The number of passengers carried was 88,774,442, of which 79,914,452 were suburban passengers carried at an average rate of .9 cents per mile and 8,859,990 "country passengers," carried at an average rate of 1.32 cents. Extensions amounting to 163 miles were opened for traffic during the year, and 1,078 miles of extensions are under construction.

NEW BOOKS

Claims Between Shippers and Carriers. By Ralph Merriam of the Chicago Bar. Size, 6 in. by 9½ in., 1815 pages, bound in buckram. Published by La Salle Extension University, 2550 South Michigan avenue, Chicago. Price, $10.

This book is a digest of the decisions of the American courts, both national and state, relating to claims between shippers and carriers by rail and water from the earliest times (1658) to the present day, and is said to cover every point made in each decision. The various points are concisely and clearly summarized and the arrangement is such that the rulings of the courts on the exact point at issue can be instantly located, making the book unusually valuable for ready reference.

In seeking the decisions upon any question, the reader may by a glance at the table of contents determine, first, the main division within which the point falls; and, second, the particular section covering the set of facts or circumstances involved. Turning to this section of the body of the book he will find the cases upon the point assembled, with the decisions of the United States courts coming first, followed by those of the state courts in alphabetical order. The decisions are then arranged, first, according to the rank of the court; and second, chronologically. A slight variation of this arrangement is made in the cases under "Shipments by Water," due to the fact that recent decisions of the United States courts are arranged alphabetically according to districts. At the end of each decision appear the name of the case and a reference to the official report or reports in which the full opinion is printed. As an additional aid to the reader in locating any point he wishes, there is a 50-page alphabetical index at the end of the book.

The author is known to traffic men as co-author of Lust and Merriam's "Digest of Decisions Under the Interstate Commerce Act," and his new work should be valuable to all traffic men both of railroads and of industrial companies as well as to operating men and others who have anything to do with the handling of claims or the prevention of loss and damage to freight.

Letters to the Editor

ORIGINAL COST TO DATE, COST OF REPRODUCTION NEW, AND COST OF REPRODUCTION LESS DEPRECIATION

NEW ORLEANS, La.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

It is becoming increasingly evident from the trend of discussion that "cost of reproduction new" is taken to mean the problematical expense of providing a hypothetical substitute transportation plant rather than the retracing at present-day prices of the growth of the existing plant. Else why this talk of "rational programs of construction"? Perhaps a hybrid having more or less the characteristics of both parents will be the final outcome. What is the real meaning of the valuation act of March 1, 1913, in this respect? Is it intended to ascertain what it would now cost to build railroads of similar intent and purport but not necessarily identical with the present ones? Or may we lay down the principle that everything that has entered into the productive cost of the present transportation plant to date, minus the deletions, should figure in its reproductive cost in like manner and that nothing that has not should? Cannot the intimate connection between cost of production, cost of reproduction new, and existing depreciation be argued from the very juxtaposition of the phrases, "original cost to date, cost of reproduction new and cost of reproduction less depreciation"? How else will "cost of reproduction less depreciation" fit in with the depreciation in the existing plant?

The most damning feature of such "cost of reproduction new" is its necessarily theoretical and academic basis. It is not intended to be put to the acid test of accomplishment. Railroads do not spring like Minerva full-panoplied from the brain of Jove. Railroads, moreover, like castles, may be built in the air. Are we justified in making use of the experience of the past, dearly bought at the sacrifice of investors, only to the extent of avoiding proven errors, thus cheapening the estimated cost of construction? Can we assume in our program of reproduction the collective engineering wisdom of the country such as was not at the disposal of original constructors? Then, again, there are the liable false assumptions of ideal financial arrangements, unlimited and ever-ready capital; indeterminate time; ideal conditions alike as to weather, labor troubles and a market for supplies without fluctuations; the perfect co-ordination of all parts of the directing and working organization without friction or lost motion; construction without waste; continuous and contiguous construction as opposed to piecemeal growth, spotted in time and place; all of which is contrary to general railroad experience. Even where, under the proposed scheme, provision is to be made for the cost of experience and similar contingencies, it is on some percentage basis, which is highly unsatisfactory and likely to be at great odds with reality.

The valuation is entirely without meaning unless intended to be used. Of possible uses, not the least important is as a basis of criticism of existing passenger and freight rates. In any resulting revision, two parties are vitally interested, the public investing in railroad securities, on the one hand, and the traveling and shipping public, on the other. We should carefully guard against adopting valuation methods which may either confiscate private property or mulct the public according as they depress or inflate actual railroad values.

On the other hand, what more natural than, having ascertained according to law the actual original cost to date, to take these same units of talent, land, labor and material and restate them in money equivalents of the present time. "Cost of reproduction new" would thus measure the increment or decrement in the investment as wrought by the passing years. We should then have but one basic statement (by valuation sections and recapped) of "original cost to date, cost of reproduction new and cost of reproduction less depreciation," with deletions in italics, as deductions, when they occur, and arranged in columns as follows:

1. Description of units of property broken up into elements of cost.
2. Date as of which investment was made.
3. Actual original quantities to date as proven from the records of the carriers, supplemented and checked by the physical inventories, or estimated as closely as possible when otherwise unobtainable.
4. Actual or estimated original cost to date.
5. A restatement of the above in money equivalents of the present day.
6. Ascertained existing depreciation in the present plant.
7. Cost of reproduction new less depreciation.

J. S. TASSIN.

THE TRAIN DESPATCHER'S LIFE, PAST AND PRESENT

CHICAGO, Ill.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

That article on "The Train Despatcher," by "One of Them" in your issue of August 20 is a fine portrayal of the strenuous life of a train despatcher on a busy single track railroad. I agree with all he has to say, except that, on the whole, I do not think the despatcher's lot is more strenuous today than it was 20 or 25 years ago. However, I have been out of harness as a despatcher for 15 years (though still in the service) and my perspective may have changed. It is true they now have the sixteen-hour law and other laws and requirements that add to their work, but I think these additional burdens are at least offset by conveniences now enjoyed in the way of better lighted and better ventilated offices, better circuits and often shorter districts, larger engines and consequently fewer trains to handle and double tracks; and, above all these advantages, more considerate railway officers, from the president down to the trainmaster.

The despatcher still is one of the most important spokes in the steering wheel. In times past despatchers were subjected to "umbrella rules"—rules that often bound them regardless of conditions—but we have got away from that; and on all of the more important roads the despatcher has, in a sense, been elevated to an officer and is actually recognized as such.

The writer was a despatcher in the latter eighties and early nineties, when the superintendent was as much of a Czar toward the despatchers, as some of the despatchers were toward the "OS" operators. I served for several years under one superintendent whom I shall never forget. This man had roughed it for many years, was familiar with adversity, rather coarse and of the driving kind, but withal a shrewd man. He came to the road as a trainmaster and succeeded to the superintendency only a few months later; this being his first position as superintendent. He was about 50 years of age, and his attitude toward most of his subordinates was that of a greatly exaggerated superiority. Everybody got out of the way and gave him a clear track when they saw him coming. The underground reports via the switch shanty were to the effect that he was a "terror" and had been run off of some road in the Southwest on account of his hard treatment of men; and his attitude from the start was anything but reassuring. He brought with him his family, including four boys, the eldest about 17 years old. I should like to tell you about how he put this boy ahead, but to make a long story short I will only say that to maintain one's rights it was necessary that we (the operators and despatchers) had to stand up with great firmness, and sometimes appeal over the superintendent's head. The boy was soon made despatcher and after one collision and a number of "close shaves" became a quite decent one.

The trouble with this old-school superintendent was that he didn't know how to treat men; and, moreover, didn't care to know. He was not interested particularly in either the men or the company; and, as was most natural, many of his subordi-

nates were of the same stripe. This man finally went the route of the selfish and arrogant. With a change in management he was dropped out and so far as I know has not had an official position since.

That kind of treatment of men was not at all uncommon 25 to 30 years ago. But that and other adverse conditions the present managements have overcome, so that railroad life is now more pleasant; not only for the train despatcher, but for all others.

Today the train despatcher, with other railway officers, and the employees as well, have on most roads of any consequence the assurance, not only of retention in the service, but of promotion on merit and ability; and beyond that a reward of merit in the shape of a pension. If perchance an unworthy man slips in as superintendent, the despatcher can and does have easy access to the general officers, and even to the president, if he chooses. And the higher officer, almost without exception, has graduated from the ranks, so that he naturally frowns on nepotism, favoritism and all discrimination.

The very fact that the office of train despatcher, or chief despatcher, on a busy road, is a strenuous one, is what attracts strong men. The work after all is in the nature of a race and usually (as was not always the case years ago) the best man wins. It is true the despatcher is an "inside" man; and, unfortunately, sometimes a superintendent who graduated by way of the "M. of W." route will not seem to acknowledge his persevering efforts, but will promote an outside man for performing some one piece of work to his fancy; but this, though not always right, works both ways.

After all, it is usually the wideawake, persevering man who gets there, and I think by reason of the very strenuous nature of the work, of which the officers must have some knowledge, the train despatcher's route—all things considered—is a very favorable one.

A train despatcher with the right kind of stuff in him will make his work strenuous. He maps out the moves, posts each conductor and engineer on what is wanted, breaks a passive rule here and crowds the devil there; but withal takes no chances, so far as real safety is concerned. As the writer of the article referred to observes, the despatcher is often frozen to his chair for an hour or more after his relief, so absorbingly interested in his work that he can't let go. He may often do much good in obviating trouble due to errors on the part of others. In fact, the hundred point train despatcher feels responsible for the safety of every train on his territory, and during his hours there are very few accidents due to lapses on the part of any one. He gives the crew of a train about to leave a terminal a "hunch" about a late overdue superior train that does not appear on their orders. In completing an order to another crew on the road, which puts them into a blind siding for an opposing train, he gives them a tip that number so and so is on time, etc. He keeps an eye on a new conductor or engineer, and really feels that it is up to him to get such a man over the road safely, feeling a personal pride in the work.

It is the old, old story; that feeling of self approval that we would all attain must come through sincere effort. "The divine law is very simple and automatic; we receive only as we give away."

My advice to the train despatcher would be this: If you want a position where there are only certain specific things to do, and where you can quit on the hour, look up another calling. If, on the other hand, you are ambitious, thank your stars that you have the opportunities that a position as train despatcher offers. See to it that you put your whole soul into the work to the extent that it meets with your own unqualified approval, whether promotion does or does not come as often as you think it should. A good despatcher, like good men in other lines, has initiative, and makes use of it. A man of that kind compels recognition. "The law of compensation never rests." Although, as before stated, I am now out of the train-wire harness, I beg to subscribe, like your former correspondent,

One of Them.

MAINTENANCE EXPENDITURES ON THE PERE MARQUETTE

Detroit, Mich.

To the Editor of the Railway Age Gazette:

Referring to the article published in your issue of November 19, concerning the operation of the Pere Marquette for the fiscal year ending June 30, 1915; you are justified in commenting that "it is by no means conclusively demonstrated that the 1915 rate of expenditure for maintenance can be continued without detriment to the property. Under present conditions of operation, with the necessity for heavy rails, ballast, etc., and probable cost of track labor, $864 appears to be considerably less than will be required as an average over a series of years for maintenance of way and structures."

The maintenance of way work was carried on under a carefully prepared program, which called for an expenditure of approximately $2,000,000, which we considered ample to maintain the property in normal condition; and I may state that the property is at this time, in reality, in as good physical condition as the business warrants, and in our judgment should be maintained for not to exceed $900 per mile or $2,082,600 per annum.

With a slight variation in the mileage, maintenance of way expenditures for the past 10 years have been as follows:

1906	$1,627,307
1907	1,639,447
1908	1,658,834
1909	1,669,220
1910	1,932,437
1911	2,123,296
1912	2,064,891
1913	2,944,517
1914	2,996,118
1915	2,000,282
Total	$20,656,349

This is an average of $2,065,635 a year.

Approximately one-third of the expenditures made in the years 1913 and 1914 were on account of deferred maintenance. I am satisfied we did not receive as much value for each dollar expended in this rehabilitation work as we would have had the maintenance been kept up to normal during the previous years. In dealing with the Pere Marquette we must not lose sight of the fact that of the total mileage there are but 1,339.67 miles classified as main line, the balance being branch lines and business-producing branches.

It is the judgment of all of those who have been connected with the property since the consolidation (which occurred in 1900) that it is in better physical condition to-day than ever before.

Referring to the maintenance of equipment: The expenditure of $3,492,973 may also be said to be a normal annual expenditure.

Below you will find the expenditures for a 10-year period:

1906	$1,897,036
1907	1,975,221
1908	1,966,751
1909	2,018,494
1910	2,117,700
1911	2,550,859
1912	2,804,938
1913	2,987,156
1914	6,487,963
1915	3,492,973
Total	$28,299,091

This is an average of $2,829,909 a year.

Since May, 1914, the maintenance of equipment account includes a depreciation charge of approximately $54,000 per month. Prior to this time the amount charged off to depreciation was small.

I have not gone into the detail to show the relative density of traffic handled covering the period under maintenance of way, nor the engine and ton miles under maintenance of equipment, but have treated the matter generally without going into detail, and I feel satisfied that both the equipment and roadway are being maintained fully up to a normal condition.

Frank H. Alfred
General Manager for Receivers.

Heavy Pacific Type Locomotive for the Lackawanna

Anthracite Coal Burning Engines with a Tractive Effort of 47,500 lb. and a Weight on Drivers of 197,300 lb.

About three years ago seven Pacific type locomotives* were built for the Delaware, Lackawanna & Western, by the American Locomotive Company, to replace a class of heavy 10-wheel locomotives then handling the through passenger service. The division between Scranton and Hoboken crosses the Pocono mountains and has a constant ruling grade between Stroudsburg and Pocono Summit of 78 ft. per mile for a distance of 16 miles, with curves of five and six degrees. The Pacific type locomotives were designed to handle a 460-ton train over this grade at a sustained speed of 30 miles an hour and have handled trains of eight cars weighing 530 tons at that speed.

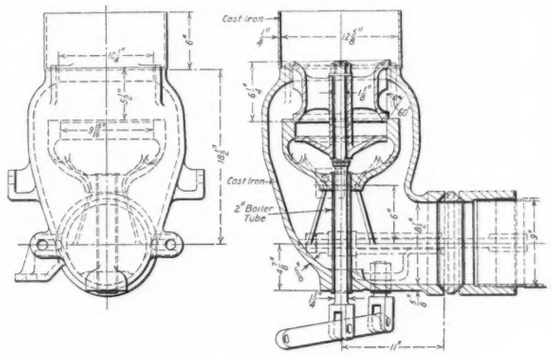
The general introduction of steel cars in passenger service has necessitated the purchase of still heavier and more powerful engines, and five Pacific type locomotives, the most powerful of this type on record at this time, have recently been delivered by the American Locomotive Company. These engines are hauling trains of nine steel cars, weighing 600 tons, over the grade referred to above, at a speed of 30 miles an hour. On other trains they are handling from one to two extra cars on schedule time on the grades, and have made it possible to dispense with all helpers on the mountain district on trains of 10 cars or less.

The new locomotives have a total weight, engine and tender, of 471,300 lb. and a tractive effort of 47,500 lb. Pacifics of the 1106 class have a total weight, engine and tender, of 449,800 lb. and a tractive effort of 40,800 lb. With an increase in weight of 4.8 per cent, an increase in tractive effort of 16.4 per cent has been obtained.

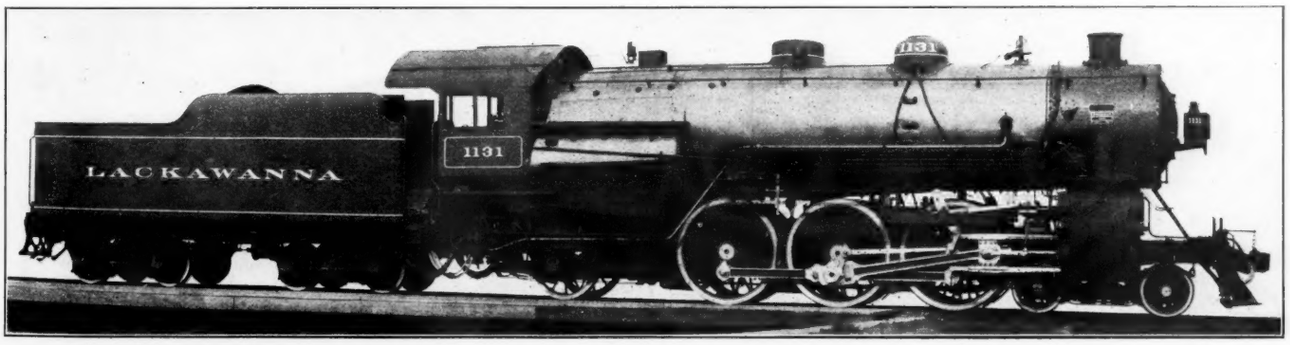
A tractive effort of 47,500 lb. from a Pacific type locomotive requires a boiler of high capacity. At the first course, the barrel is 79½ in. in outside diameter, while the diameter of the largest course is 88½ in. Baffle plates are installed along both sides of the dome opening to prevent water from washing into the dome when rounding curves. All longitudinal seams are quintuple riveted. Four of the engines have a total evaporating heating surface of 3,680 sq. ft., while the other, which is provided with a Riegel boiler, has a total of 3,935 sq. ft. of evaporating heating surface.

The firebox is of the Wootten type, for burning anthracite coal and has a grate area of 91.3 sq. ft. The general design is the same on all five engines, the Riegel firebox differing only in the application of a set of 2½-in. water tubes connecting each side water-leg with the crown. There are 38 of these tubes on each side, with a total heating surface of 260 sq. ft., which, after deducting for the holes in the crown and side sheets, gives a net increase in heating surface of 255 sq. ft. Each firebox includes a combustion chamber 44 in. long.

The engines are equipped with the Woodard throttle which has been developed and patented by the builders. In this arrangement the throttle rod is placed on the outside of the boiler shell and operates the throttle valve by means of a horizontal shaft passing through a stuffing box on the side of the steam dome. The valve stem projects downward through a passage open at both ends, but closed from communication with the throttle box. At the lower end of the throttle stem is a horizontal lever, one end of which connects through a vertical rod with the inner arm of the operating shaft on the side of the dome. The stuffing box on the side of the dome is of ordinary construction suitable for a rotating shaft.



The Woodard Throttle

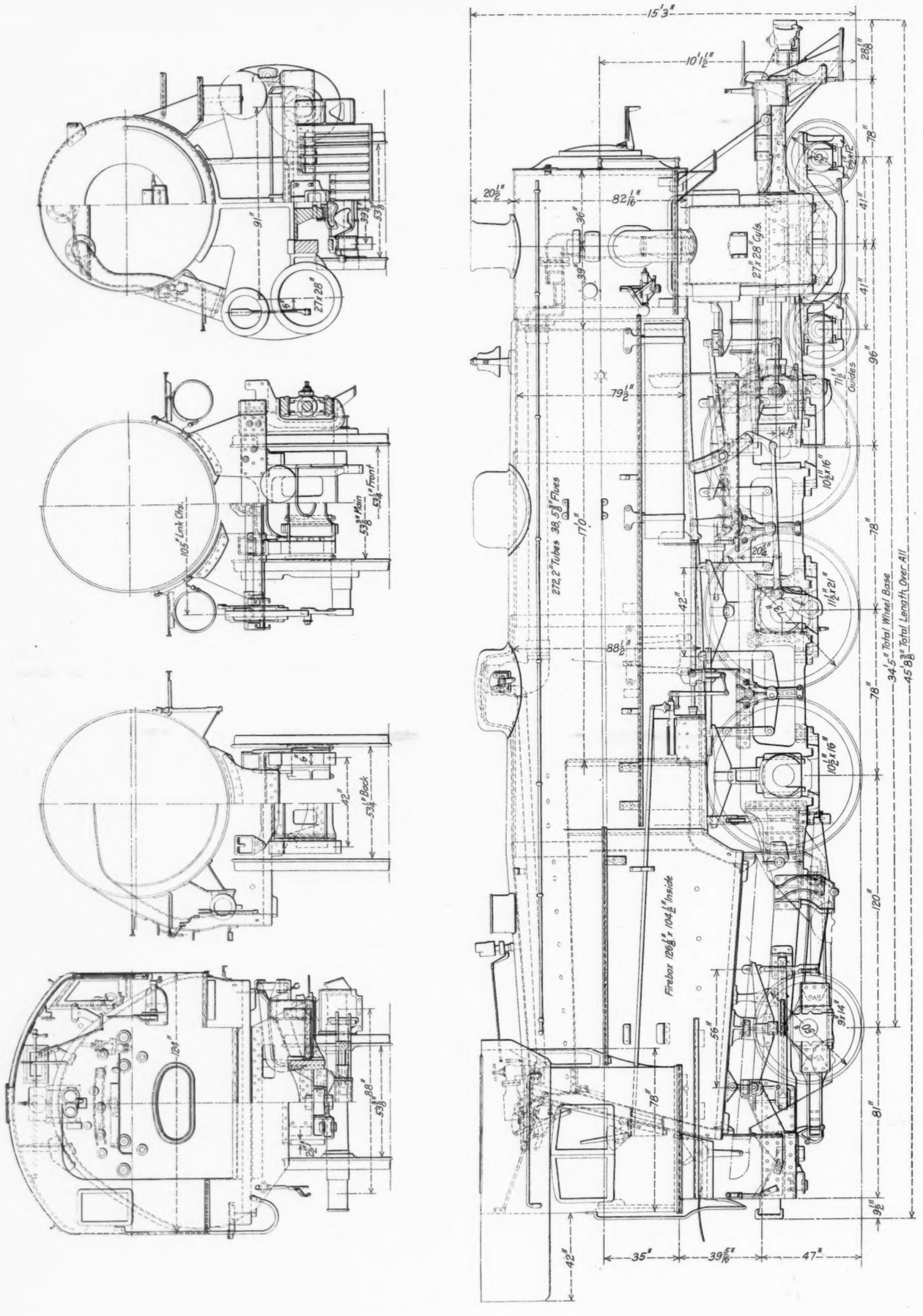


Lackawanna Heavy Pacific Type Locomotive

The throttle rod passes over the outside of the boiler jacket and in through the front of the cab. The throttle lever to which it is connected is arranged to provide a differential leverage. The leverage is greatest and the movement of the end of the lever is largest for a given motion of the throttle rod, when the throttle is closed. After the throttle valve is unseated the leverage increases, with a corresponding decrease in the travel of the lever handle for a given lift of the valve. In this way the travel of the lever handle in the cab may be kept within workable limits and a starting pull obtained sufficient to easily lift the valve.

All driving axles and main crank pins are of Cambria Coffin process steel with 3-in. holes bored the entire length after the completion of the Coffin process. The frames are of vanadium steel.

*For a complete description see the *Railway Age Gazette* for July 19, 1912, page 88.



Elevation and Cross Sections of the Lackawanna Pacific Type Locomotive

The special equipment includes Manchester-Riegel by-pass drifting valves, Walschaert direct-drive gear having the combination link attached to the wrist pin, Schmidt superheater, Security brick arch, Ragonet power reverse gear, Foulder solid back end main rod, Woodard inverted link, constant resistance engine truck, Cole long main driving-box, self-centering valve stem guides and radial buffer.

The principal data and dimensions are given in the following table:

General Data

Gage	4 ft. 8½ in.
Service	Passenger
Fuel	Anthracite coal
Tractive effort	47,500 lb.
Weight in working order	305,500 lb.
Weight on drivers	197,300 lb.
Weight on leading truck	52,200 lb.
Weight on trailing truck	56,000 lb.
Weight of engine and tender in working order	471,300 lb.
Wheel base, driving	13 ft.
Wheel base, total	34 ft. 5 in.
Wheel base, engine and tender	67 ft. 1 in.

Ratios

Weight on drivers ÷ tractive effort	4.15
Total weight ÷ tractive effort	6.43
Tractive effort × diam. drivers ÷ equivalent heating surface*	719.4
Equivalent heating surface* ÷ grate area	52.8
Firebox heating surface ÷ equivalent heating surface,* per cent	7.7
Weight of drivers ÷ equivalent heating surface*	40.9
Total weight ÷ equivalent heating surface*	63.4
Volume both cylinders	18.6 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	259.8
Grate area ÷ vol. cylinders	4.9

Cylinders

Kind	Simple
Diameter and stroke	27 in. by 28 in.

Valves

Kind	Piston
Diameter	14 in.
Greatest travel	6½ in.
Steam lap	1⅛ in.
Exhaust clearance	3/16 in.
Lead in full gear	9/16 in.

Wheels

Driving, diameter over tires	73 in.
Driving journals, main, diameter and length	11½ in. by 21 in.
Driving journals, others, diameter and length	10½ in. by 16 in.
Engine truck wheels, diameter	33 in.
Engine truck, journals	6½ in. by. 12 in.
Trailing truck wheels, diameter	50 in.
Trailing truck, journals	9 in. by 15 in.

Boiler

Style	Extended wagon top
Working pressure	200 lb. per sq. in.
Outside diameter, of first ring	79½ in.
Firebox, length and width	126⅛ in. by 104¼ in.
Firebox plates, thickness; crown and sides, ½ in.; tube, 9/16 in.; back, ⅜ in.	
Firebox, water space	front and sides, 5 in.; back, 4 in.
Tubes, number and outside diameter	272 = 2 in.
Flues, number and outside diameter	38, 5⅜ in.
Tubes and flues, length	17 ft.
Heating surface, tubes and flues	3,311 sq. ft.
Heating surface, firebox, including arch tubes	369 sq. ft.
Heating surface, total	3,680 sq. ft.
Superheater heating surface	760 sq. ft.
Equivalent heating surface*	4,820 sq. ft.
Grate area	91.3 sq. ft.

Tender

Tank	Water bottom
Frame	Channel
Weight	165,800 lb.
Wheels, diameter	36 in.
Journals, diameter and length	6 in. by 11 in.
Water capacity	9,000 gal.
Coal capacity	10 tons

* Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

INFLUENCE ON RAILS OF THE METHOD OF BLOOMING*

An investigation was made concerning the influence on the rails, of the manner in which the bloom is rolled, particularly with reference to the transverse ductility of the bottom of the base of the rail. Blooms were rolled from ingots with varying amounts of reduction between turns. Some ingots were given light reductions or squeezes and turned so as to bring the other two sides in contact with the rolls, and other ingots were given successively greater reductions between turns. Also some of the rails were rolled so that what was the top side of the ingot as it first entered the blooming rolls, formed the head of the rail and other rails were rolled so that the top side of the ingot formed the web of the rail.

The work was done at Ensley, Ala., at the works of the Tennessee Coal, Iron & Railroad Co., who kindly furnished all the material and facilities for the investigation. The rails were made by the open-hearth process and were tested by means of drop tests, tension tests, transverse tests of the base and polishing of cross-sections.

Sixteen ingots were selected for special blooming. Eight were rolled "top in top"; that is, with the top side of the ingot as it first entered the blooming rolls, rolled into the head of the rail, and the other eight were rolled "top in web"; that is, with the top side of the ingot rolled into the web of the rail. The amounts of reduction between turning were varied in the early part of the blooming and were, respectively, 1 in., 2 in., 3 in., 4 in., 6 in., 8 in., 10 in., and regular practice, two ingots being rolled for each of the eight rolling conditions. From the standpoint of the construction of the mill, it was not considered advisable to reduce the ingot more than 2 in. in one pass, and the reductions between turning of 3 in. or more were therefore produced in two or more passes.

In the drop test, the rails rolled "top in top" gave about the same results as those rolled "top in web." With the head in tension the ductility in the drop test was about the same for the different rates of reduction. With the base in tension there was a general decrease in ductility as the rate of initial reduction in blooming increased, but there was considerable irregularity in the results, and it would take a much more extensive set of tests to be able to state this as a law.

Transverse tests of the base were made by placing the rail on two supports, 6 in. long, placed opposite each other near the edges of the flanges, and applying the load to the head of the rail at the middle. The general average results showing breaking load and transverse ductility of the rails rolled "top in top" were about the same as those of the rails rolled "top in web." The transverse results were also about the same for the various rates of reduction in blooming. The longitudinal ductility of the base in the drop test averaged 15.6 per cent, and the transverse ductility of the base in the transverse test averaged 2.7 per cent.

The thought is expressed that part of the problem of improvement of rails consists of increasing the transverse ductility of the base and particularly of eliminating the cases of very low transverse ductility. In the tensile tests the rails rolled "top in top" gave about the same results as those rolled "top in web." The tensile results were also about the same for the various rates of reduction.

Incidental to the main investigation, a comparison was made of the tensile results from three locations in the rail section, namely, the upper corner of the head, the interior of the head and the flange. For a given tensile strength, the ductility was greatest in the flange, next in the corner of the head and least in the interior of the head.

Cross-sections were cut from the head of the rails, polished with emery, etched with copper-ammonium chloride solution and finally polished with tripoli. No internal cracks were found in any of the samples examined.

In conclusion, the general results may be summarized as follows: The rails rolled "top in top" gave about the same results as those rolled "top in web," in the drop tests, transverse tests of the base and tensile tests. The results were also about the same for the various rates of reduction in making the bloom, except that in the drop tests with the base in tension there was a general decrease in ductility as the rate of initial reduction increased, but there was considerable irregularity in the results, and it would take a much more extensive set of tests to be able to state this as a law. This work had reference particularly to the transverse ductility of the base, and not specially to the production of seams, due to the tearing open of the sides of the bloom in rolling.

* Abstracted from Bulletin 179 of the American Railway Engineering Association.

THE RAILROAD CLERK

By V. R. Cooke

So many articles have been written recently about the army of "competent and incompetent men in blind alley jobs," more commonly known as railroad clerks, and so much has been said deploring the conditions that exist, that it is a bit surprising that none have ventured to state *why* these conditions exist.

A clerk being in a position, drawing pay, has a right to be judged competent until he has been given an unprejudiced trial and has been found wanting. This trial the clerks have not been given. This is evidenced by the attitude of the officers towards their clerks, never giving them an opportunity to prove their worth in any official capacity, and by the failure on the part of the clerks themselves to prove by their actions in their present positions that they are competent to fill positions of greater trust.

The first reason may be explained by pointing to the time worn custom of making officers by promoting from the ranks of what have been termed "practical" railroad men. Not so very long ago, before these days of cost sheets and tonnage bureaus, officers were chosen more on account of their aggressiveness than progressiveness; more on account of their ability to handle men and keep things moving than for their ability to keep down the cost of operating expenses and show the why and wherefore in case of increase or decrease. Such men did not have time nor inclination to secure much of an education and, in fact, often prided themselves upon being considered "self made." They looked upon their clerks as a useless expense and only fit to wait upon them, to write letters, and keep nice records for the benefit of the public and the inquisitive railroad commissions. The clerks, on the other hand, were drawn from the ranks of those who had had better opportunities of securing an education and who on account of physical weaknesses or timidity did not care to follow the hardships and more dangerous occupations of the road. In a great many instances they looked down upon what they called the "outside man." Thus. when the outside man was promoted over them, there was an antagonistic spirit existing, even though it did not appear on the surface.

As an illustration we will say that Jones starts out as fireman, serves his apprenticeship and in due time becomes an engineer. As an engineer he is careful, observing and aggressive, being possessed of a sound body as a result of his years of hard work and clean living. He has a clear head and quick brain, even though he has not much book learning. He grasps an opportunity to clear the main track quickly sometime when there is a derailment, makes a hit with the division officers, and in time is made trainmaster. He assumes the duties of trainmaster; and dictates his first letter to Clerk Brown. Jones not being accustomed to dictating, makes a few grammatical errors and Brown instead of changing the letter himself thinks he will be smart and have some fun at the expense of the new T. M.; and calls Jones' attention to his errors before the boss. There immediately arises in Jones' mind a deep prejudice against clerks in general; and when he later becomes superintendent or general superintendent, that prejudice in a measure still remains. Considering the hardships he himself had to put up with to achieve his success, he would never recommend one who has had an "easy time" in an office to succeed himself or to take any such position.

So much for the official end of it. The second reason why clerks continue to be "just clerks" is due largely to their own short sightedness. Instead of specializing in whatever particular branch of the service they may have taken up or wish to advance in, they continue in the routine that has been laid out for them.

Specialize! If you are going to be a rate clerk find out all that there is to be known about rates and traffic. If you are a stenographer or secretary, be a good one. Strive to make your speed and accuracy better than that of the other fellows, not simply just as good. Learn all you can about the department you are working in, and soon you won't be referred to as "just a stenographer."

If you are a timekeeper or an accountant strive not to be just a machine; make a statistician out of yourself. Post yourself on the per cents of increases and decreases and costs per mile so that when the boss asks you about this month's figures and how they compare with last month's, you can give him a prompt answer, containing the facts in a few words. Don't merely seek to memorize a lot of figures (a parrot can do that); know, yourself, the meaning of them. And if you have a suggestion that may save a few dollars, don't be afraid to make it. If it's a good one the boss may use it in suggesting to those higher up; and if he fails to mention your name in his report of the matter, don't get sore. The boss hasn't forgotten you. Remember, that Thomas A. Edison makes fortunes every day from the minds of men who are never heard of as individual inventors; but they, working under him, are getting rich also.

The question has been asked, "Where can we obtain that knowledge to enable us to better our condition?" Pick up almost any magazine and you will find the answer: the correspondence school, or the night school, or the business college. What stenographer would not be benefited if he took a post-graduate course in touch writing? What station accountant or timekeeper would not be improved by a course in accounting? What rate clerk would not advance himself further along the road to a position as soliciting or commercial agent were he to take a course in traffic?

We clerks must look for betterment of our condition through individual efforts. The salvation of the railroad clerk does not lie, as many seem to think, in "organization." Any clerk who will conscientiously analyze this matter can easily see why. The word "clerk" is too general; there are as many different kinds of clerks as there are departments to a railroad, and to get all the various departments upon a uniform working basis with hours that would apply to all and a schedule of salaries (emphasis upon the word salaries) that would cover each branch of clerical service would be impracticable. You might as well talk of making one schedule of wages for the operators, brakemen, conductors, engineers, firemen and shopmen and expect them to all agree to it.

Again, organization of all branches of clerks would not be fair to the companies that employ us. We, through the very nature of our positions, handle some of the most confidential affairs of the company, and as we are but human who among us could keep from using this information to our own advantage if we owed allegiance to an outside organization? Loyalty to the company is nothing more than is due. He who is not loyal is as incompetent as he who shirks his work and as untrustworthy as he who steals from the cash drawer.

Cannot both the railroad and the clerk offer a little more than they have done in the past? One of the largest eastern railroads has already made a great stride in this respect. This road now has at its head a broad-minded man who is a gentleman in every sense of the word, whose diplomacy, based on an education along *all* lines, has already won for his road many friends in a territory disposed to be unfriendly. The effects of such a broad-minded policy, so far as the clerks are concerned, are already noticeable. This road has at present on one of its districts two trainmasters, two yardmasters, and one chief despatcher who were promoted from the clerical ranks. It behooves us all to give the best that is in us, endeavoring at all times to improve ourselves so that if by any chance opportunity should knock at our door we should be prepared. If we do our part well, it is not a very far off day before the railroad companies will do theirs.

Egyptian Railway Taken Over.—The Egyptian State Railway administration formally took over, on December 1, the Helouan line, belonging to the Egyptian Delta Light Railway Company, Ltd.

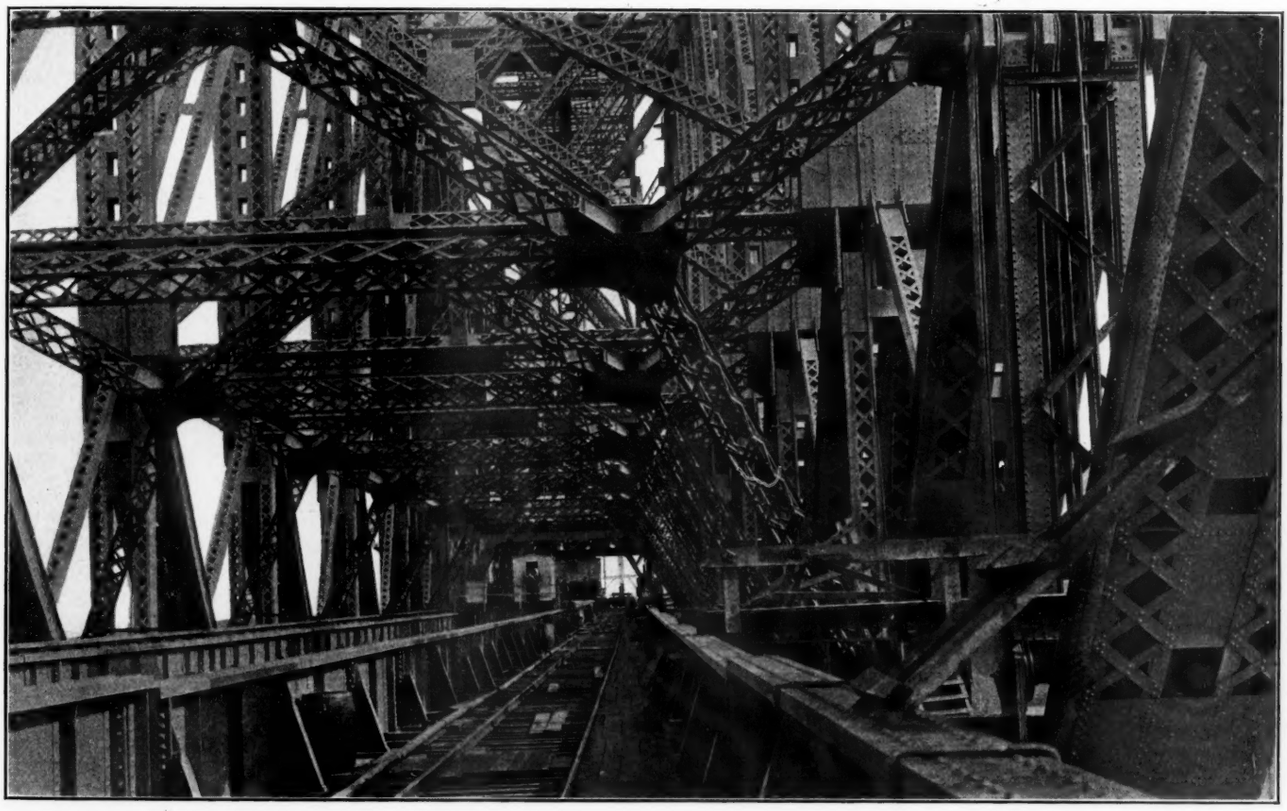
Progress on the Erection of the New Quebec Bridge

Work on This Notable Structure Is Proceeding Rapidly and It Is Expected to Be Completed Late in 1916

By H. P. Borden

Assistant to Chief Engineer, Board of Engineers, Quebec Bridge, Montreal, Que.

Satisfactory progress is being made this season in the erection of the new Quebec bridge. At the end of last year the anchor arm was entirely erected with the exception of the upper half of two panels next the main pier. During the winter the north portal was erected and a certain amount of riveting done at various points. Work was started this spring, about the middle of April, since which time the program of the contractors has been followed very closely. It was expected that the erection of the main posts would require more time than was actually the case. These posts are each shipped in 27 separate main sections, and had to be assembled with splice plates attached, necessitating very careful and accurate handling by the cranes. Both posts were assembled simultaneously, the entire erection being completed in thirty days. These posts weigh approximately 1,000 tons. Although there were six horizontal field splices, the length center to center of pins was as nearly accurate as it is possible to measure. From four to six gangs have been constantly engaged in riveting up splices in these members since their erection started, this work being now practically completed.



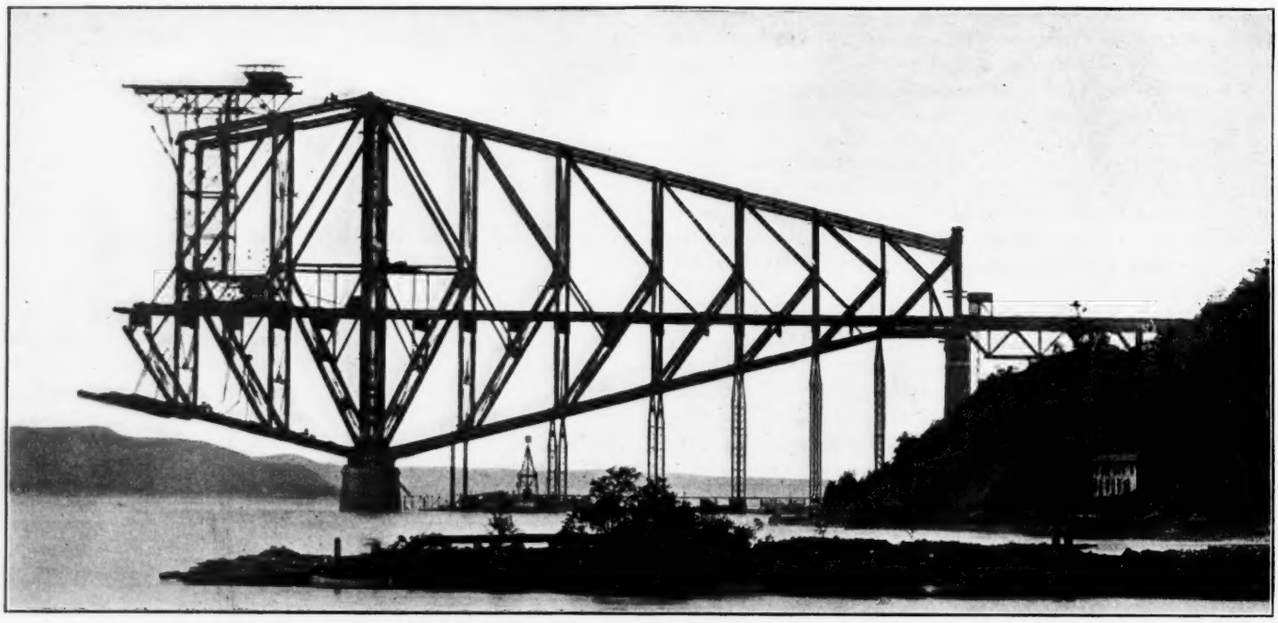
General View Looking Through the Bridge from the Portal

In the erection of the cantilever arm, which is progressing rapidly, each panel is completed as the work progresses, the complete bracing being put in place by the rear booms of the traveler as it advances panel by panel. On account of the fact that there is a vertical field splice in the bottom chord between the main panel points, these chords are erected in place on what is known as a "flying bridge." This bridge is a steel platform capable of taking one full panel, supported at the shore end by means of pins connected to the chords, and at the river end by links attached to the upper web members. This "flying bridge" is planked over and affords ample room for jacking and riveting operations, providing a perfectly safe platform for the men to work. As each panel is completed, the bridge is taken up by the overhead cranes and moved ahead to its new position. At the present writing the fourth panel of the cantilever arm from the main pier is about half completed. The first three panels took approximately 25 days each to erect, including Sundays and lost time. As the panels progress towards the end, the members are lighter and the splices smaller, and the speed of the work will be materially increased. Owing to the great accuracy of the shop work, the members go together without any difficulty in the field, and no time is lost in correcting errors.

It is expected that the entire north shore cantilever arm will be completed by the middle of November if too much time is not lost by bad weather. The traveler on this side will then be taken down, transferred to and reassembled at the site where the suspended span will be erected.

As the erection of the cantilever arm progresses, very careful measurements and observations are made to determine whether the alinement is perfectly correct. At the present time the center points of the floorbeams of the erected portion are absolutely in line with the center point of the pier on the south side of the river. The erection of the main shoe on the south shore began on

July 8 of this year. Because of the experience gained in the erection of the falsework and anchor arm on the north shore, the erection of the south anchor arm has been greatly facilitated and much better time has been made. Although the work was started this year at approximately the same time as work on the north anchor arm last season, the work at the present time is nearly six weeks ahead of last year's program. It is expected that before the work closes down the anchor arm will be completely erected, including the main post. Next year there will be no difficulty in fully completing the south cantilever arm in plenty of time to connect up the suspended span.

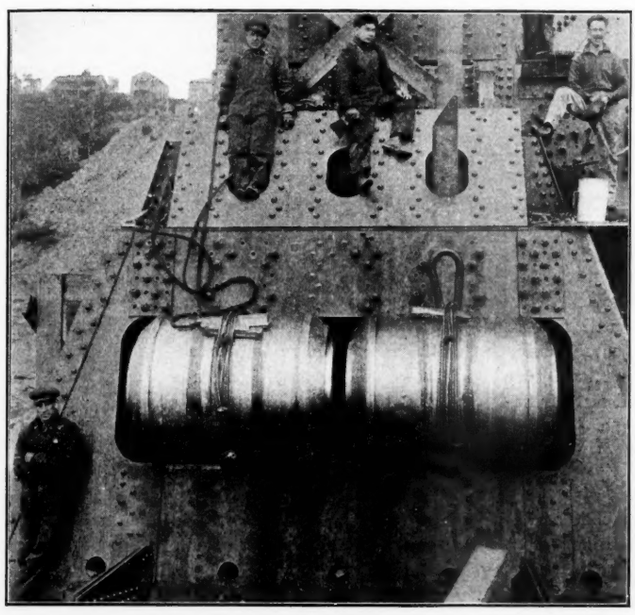


View Showing the Progress of Erection on the South Shore

The suspended span will be erected at Victoria Cove, a point

View of the South Shore Span Showing the Floor Supported on the Inside Falsework and the Bottom Chord on the Special Outside Falsework

about three miles below the site of the bridge. This span will be erected on falsework supported by concrete piers. It will be entirely erected at this site, with the exception of a portion of the floor system, and will be floated to the bridge on specially designed pontoons. Hangers connected to the four corners of the cantilever span will be attached to the suspended span of special devices, the entire span being lifted into place by means of 2,000-ton jacks placed at each corner. The suspended span is 640 ft. long, 88 ft. wide, and 110 ft. high at the center, and weighs approximately 6,000 tons. It is expected that late in October, 1916, the work will be sufficiently advanced to float this span into place. If this program is carried out, it will be possible to run trains across this bridge at the close of next season.



View of the Main Shoe with the 30-in. Pins and the 45-in. Sleve in Place, Preparatory to Placing the First Section of the Bottom Chord of the North Cantilever Arm

View of the North Cantilever Arm, Showing the Process of Moving the "Flying Bridge" Forward One Panel

REORGANIZATIONS AND RAILROAD BONDS

By JOHN E. BLUNT, JR.*

The weakness of a bond, as compared with a mortgage, lies in the inability of the individual holder to act for himself in realizing on his security, and in these days, when corporate mortgages overlap to such an extent that it is seldom a single issue can act independent of others, the complications arising are extremely difficult of solution.

A reorganization is usually the outcome of a situation of which the first step is a receivership. Close upon the heels of the latter follow the "protective committees" with their bondholders' agreements. You read in the evening paper that a certain property has gone into the receiver's hands; in the morning paper you find certain parties, at the request of a large number of bondholders, have consented to act as a committee. What is a bondholders' agreement? Briefly, it is a more or less elaborate power of attorney giving to the committee authority to do what in its judgment may seem best for the bondholders' interests. There are limitations, restrictions and privileges of withdrawal, but in actual practice it amounts to a complete delegation of power.

If you desired, in the ordinary course of business, to give a power of attorney to an individual you would naturally want a man in whom you had complete confidence as to his integrity, his judgment and his ability. There is no reason why the same standard should not apply to a member of a bondholders' committee. He should really represent the bondholders and should be selected for his qualifications for the position. He should realize its responsibility and trusteeship nature and be able to give sufficient time to make his services of some value.

The practice of officers of the trustee acting on a committee is subject to criticism. There should be co-operation between the committee and the trustee, and the advice of the latter is frequently of great value, but they should not attempt to serve in what might prove a dual capacity, but rather hold themselves in readiness to act as a check on the committee when necessary. In other words, they should act with, but not on the committee. I do not know why this association should not at a future meeting outline some plans for the selection or election of bondholders' committees.

A word may be said here on the question of expenses. They often seem out of all proportion to the results accomplished. Men who devote their time to constructive work should be well paid for their services, but a corporation that is unfortunate enough to get into the hands of a receiver should not be considered legitimate prey for the avaricious.

The amount of railroad mileage in receivers' hands today is greater even than in the years following the panic of 1893, and there has been no time in recent history when reorganizations were as numerous as at present. A study and comparison of some of the plans that are now being put forth would prove interesting and profitable, but this is not possible in a paper of this length.

I will say, however, that most of those I have had occasion to examine seem to offer temporary rather than permanent relief. Fixed charges are reduced, assessments are levied and various kinds of pressing obligations are paid off, but the new securities

*From an address before the Fourth Annual Convention of the Investment Bankers Association at Denver, Colo.

are issued in the same manner as the old, and there is nothing to prevent a repetition of the trouble in the more or less distant future.

My own opinion is that before the majority of our railroads can hope to take care of what we may call their permanent future needs they will have to undergo reorganizations more drastic than most of those now proposed. They must issue their securities along new lines that will afford every possible protection to the legitimate investor, particularly the bondholder. What is there in the average railroad bond offered today that should attract anyone who gives it careful consideration? It usually runs fifty or more years without any provision for payment of the principal. And who is there during that fifty years who is looking after the bondholders' interests? Does the management? Not always, for it represents the stockholders. Does the trustee? Not to any greater extent than provided in the trust deed. Does the bond house? Sometimes, but there is hardly profit enough to warrant any great expenditure on its part. As a rule, the bondholder is helpless until the bonds are in default, and when trouble comes receivers' certificates, equipment trusts and even notes are taken care of first, and here let me say that I think equipment trusts, as issued at present, are the greatest possible menace to railroad mortgage bonds. A New York house making a specialty of equipments is authority for the statement that while in 1900 there were only $60,000,000 equipment bonds outstanding, the amount at the present time approaches $600,000,000, and all of them coming due at the rate of one-tenth each year for no better reason than that this kind has been found easiest to sell. Our railroad committee is doing some excellent work in outlining improvements in railroad trust deeds, and I trust will permit me to say here that I believe that any general mortgage drawn hereafter should provide for the issue of equipment bonds thereunder so that the road and equipment can be kept together, but making the bonds issued for equipment (while not differing as to lien from the longer time bonds) mature serially in one to twenty years, which is about the average life of the equipment, having them paid out of earnings as a regular depreciation charge.

I have had occasion to look into a certain railroad, and I find that at the rate it was charging off depreciation in equipment it would have had to have lasted 582 years, and that all the dividends that were paid in ten years just about equaled the amount that should have been charged off for maintenance and depreciation.

I think that the present troubles of the railroads can be largely attributed to two causes: bad financing on the one hand; failure to receive authority to increase rates sufficiently to meet increased cost of service on the other, and the tendency is for those responsible for each of these conditions to shift the blame on the other. The greatest obstacle to railroads securing what they really need today is the questionable financial transactions indulged in by the prominent financiers and bankers.

What are some of the remedies? I am aware that it is easy to criticize, but hard to construct. There are practical questions to be faced in all these situations that make it extremely difficult to work out our ideals and theories. I have no sympathy with those who are indulging in wholesale denunciation of railroad management and I believe that this country cannot have permanent prosperity until the railroads can share it. However, we must make an effort to get this railroad financing on a more satisfactory and solid foundation.

Let us provide sinking funds for the payment of mortgages in full. It requires only ½ of 1 per cent a year to pay off a 5 per cent mortgage in 50 years. In other words, while it requires $50,000 a year to pay the interest on a million dollar loan, an additional $5,000 will take care of the principal as well.

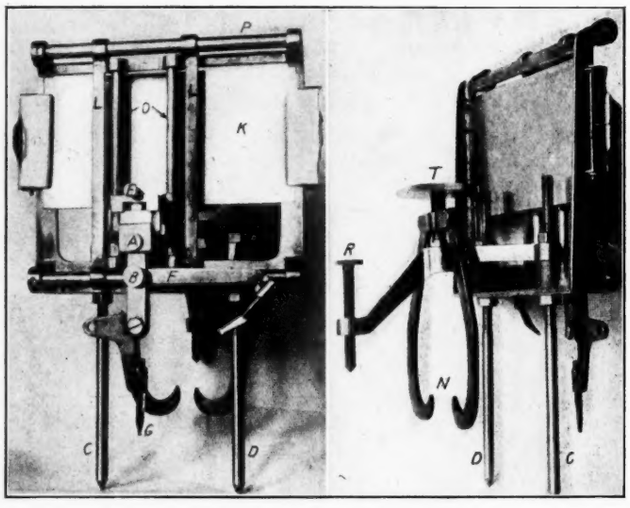
Let us have some means of taking care of the bondholders' interests during the life of the bond, either by enlarging the powers of the trustees, or possibly by giving the bonds voting power and a voice in the management of the road. I do not know why this should not be done, especially in cases where there is little equity in the stock.

We investment bankers distribute by far the greater part of the bonds issued in this country, and while most of us do not have the opportunity of originating the larger financial deals, we can nevertheless make our influences felt if we have the courage of our convictions. We ought to be in the position of an impartial judge or jury, able to put a stop to corrupt or incorrect financial practices, and at the same time as representatives of investors secure for our corporations such fair treatment at the hands of legislators as shall protect the investors' rights.

But, before we will be in a position to do this, it will be necessary to improve our own standards. I am afraid that we cannot entirely escape the responsibility for some of the conditions existing today. Has not the desire to make quick profits or the desire to participate in some large piece of financing caused many a hasty decision which should have been deferred until a careful investigation could be made? However, we cannot help the mistakes that have been made in the past, but we can turn our faces in the right direction, and while the desired results will not be obtained in a day or a year, we can make a start along the line of progress.

A RAIL PROFILE MACHINE

The accompanying photographs illustrate a rail profile machine, which embodies several advantages, of which the most important is the combination of accuracy with adaptability for rapid placing and removal of the apparatus from the rail. As shown in the photographs, it is attached to the rail by placing the points of the rods D and C on the tops of the flanges of the rail base, the point of the screw R on top of the head, and the points of the hooks N on the under side of the head, the



Two Views of the Rail Profile Machine

whole being made fast by turning the disc T. To release the machine this disc is given a quick turn in the opposite direction.

The profile is drawn on the prepared paper K by means of the brass pencil E. This is mounted in the crosshead A, sliding vertically in the rods O, which are mounted in a second crosshead L, sliding horizontally on the rod P. The arm F holding the pencil points G and H are rigidly attached to the crosshead A, secure against any rotation in the plane of the paper As a result, any movement of the points G or H is reproduced simultaneously by all other points in the arm F and the crosshead A, and is recorded by the point E. By removing the pin D the frame F may be rotated 90 deg., permitting the point G to take the place of the point H, or vice versa, the latter being used for the underside and sides of the head, while the former is used for the top.

This machine has been in use on six or seven American railroads for the past three years with satisfaction. It was designed by C. D. Carey with Robert W. Hunt & Co., Pittsburgh, Pa.

Production of Smoke by the Railways of Chicago

Effect and Amount of the Smoke Produced by Locomotives in Chicago, and Results of Special Tests

An abstract of the complete report on Smoke Abatement and Electrification of Railway Terminals at Chicago, made to the Chicago Association of Commerce, was printed in the *Railway Age Gazette* of December 3, page 1047. In the issue of December 10, page 1089, the technical phases of the electrification were considered, and in the issue of December 17, page 1125, the cost set forth in more or less detail. The following gives in similar detail the findings of the committee regarding the amount of smoke made by locomotives in Chicago, together with the results of various scientific investigations made by the committee regarding locomotive service.

The committee pointed out that the factors affecting the formation of smoke are the combustible, the supporter of combustion (air), and the temperature at which combustion proceeds. Stated briefly, the combustible elements in coal may be grouped into two divisions, namely, volatile matter and fixed carbon, the proportion of these varying greatly in the various kinds of coal. As a supporter of combustion the air may be regarded as being composed of oxygen and nitrogen. Theoretically there must be 2.67 lb. of oxygen, or 11.55 lb. of air, for every pound of carbon. In ordinary furnace operation, however, it is necessary to provide for more than the theoretical amount of air. Regarding the third factor in combustion, namely, the temperature, it may be stated that every combustible has its critical temperature, below which it will not unite with oxygen.

The combustion of bituminous coal proceeds by stages. There is at first a period occurring at comparatively low temperature, about 500 deg. F., of so-called "destructive distillation," in which a disruption in the substance of the fuel takes place, the volatile portion being thrown out and separated from the non-volatile. The second stage of combustion involves the decomposition of the hydro-carbon, the volatile portion, and the burning of its gaseous constituents at a temperature of about 800 deg. F. This stage is a critical one, as regards smoke formation. If too little air is admitted to the furnace, or if the amount admitted is not properly distributed a portion of the carbon in the fuel is carried away unburned and visible smoke results. The third stage of combustion proceeds at a temperature which is nominally about 1,600 deg. F. It is during this stage that the non-volatile portion of the fuel, consisting chiefly of carbon, is burned. The third stage of combustion may easily be made smokeless, but if the supply of air be deficient incomplete combustion and visible smoke may result.

An important aspect of combustion relates to the economical use of fuel, which is a matter that cannot be completely separated from that of smoke prevention. As a result of elaborate tests made in recent years, it has been determined that under certain conditions resulting in apparent smokelessness there may be an escape of unburned combustible gases with a consequent loss of heat units while conditions which may utilize fuel value to a fuller extent result in a slight degree of smokiness. Careful laboratory tests have demonstrated that the amount of heat lost in black smoke is comparatively insignificant, one investigator reporting that under the worst possible conditions of combustion, if the smoke were collected there would be a saving of only 14.7 lb. from a ton of coal, provided all the smoke were burned again.

As a means of eliminating smoke at engine terminals, roundhouses, etc., the committee referred to various smoke washing devices, calling particular attention to the smoke washing plant of the New York Central at its Englewood roundhouse in Chicago. This plant was described in the *Railway Age Gazette* of September 24, page 558. Referring generally to the smoke washing process, the committee said: "The possibilities of the process have long been understood. Its application has been retarded by difficulties encountered in maintaining the plant in the presence of the corrosive acids developed by the process, and by operating costs arising from the consumption of water and power." Smoke washing as a process of general application is still in an experimental stage. Enough has been accomplished to prove that by means of it practically all the objectionable elements in smoke can be suppressed.

The precipitation of suspended matter and gases may also be accelerated by electrical means. If the products of combustion are made to traverse an electrostatic field the solid particles may be intercepted. This principle has been employed in the removal of solids from the gases of metallurgical and other industrial furnaces. A few applications have been made in connection with the furnaces of boiler plants; the approaching soot or dust particles, responding to electrical influences, attach themselves to the grating as do metallic particles to a magnet. The grating is cleaned by interrupting the current. The New York Edison Company has experimented with this process as a means for the suppression of fuel, dust and ash from the stack of one of its stations.

COAL AND COKE CONSUMED BY STEAM LOCOMOTIVES

From a careful investigation with the co-operation of all the roads operating in the area of investigation it was determined that during the year 1912, 2,555,233 tons of coal were consumed by steam locomotives in service within this area. Of this, 1,363,503 tons, or 53.37 per cent, was consumed by yard locomotives; 258,787, or 10.13 per cent, by road freight locomotives; 479,738, or 18.77 per cent, by freight locomotives in transfer service; 21,545 tons, or 0.84 per cent, by engines in passenger transfer service; 240,288 tons, or 9.40 per cent, by engines in through passenger service, and 191,372 tons, or 7.49 per cent, by locomotives in suburban passenger service. In contradistinction to the coal and coke consumed by locomotives in service a separate investigation was made to determine the amount of fuel consumed by steam locomotives at locomotive terminals during the same year, 1912. This was found to be 260,167 tons.

In the committee's investigation in determining the relative density or visibility of the smoke the Ringelmann method was employed. In computing the smoke density for a number of stacks or for those of an entire service or district the observed results are reduced to unit values, the value of one stack for a period of one minute being termed a "stack minute," and the omission of No. 1 smoke for one minute, or its equivalent, being termed a "smoke unit." By employing these unit values the percentage of density as measured by the Ringelmann scale may be computed by means of the following formula:

$$\text{Percentage density} = \frac{\text{Smoke unit} \times 20}{\text{Stack minutes.}}$$

In the development of the committee's investigation with reference to the visible properties of smoke a corps of from 16 to 20 trained smoke inspectors under the supervision of a chief inspector, were engaged in making observations of smoke density from April 22, 1912, to March 14, 1913. Observations of smoke from locomotive smoke stacks were made at each railroad yard, at each locomotive terminal, and at various points along each line of railroad within the area of investigation. The records show that 10,653 observations were made of smoke emissions from steam locomotives in railroad yards and at points on the line, and that 1,323 observations were made of smoke emissions from locomotives at terminals, a total of 11,976 observations. It was found that more smoke was produced, or, rather, the

average density of the smoke was greater, in the outer zone, Zone *B*, than in the inner zone, the latter including the most congested part of the area of investigation. The average density for Zone *A* was 15.30 and for Zone *B*, 23.17, making an average of 16.79. The road freight locomotives gave the greatest trouble, the average density in Zone *A* for this class of locomotive service being 25.32, and in Zone *B* 26.91. The steam locomotives rank third in the list of the various services which produce smoke in Chicago, the complete list being given below, according to the relative amount of average density provided:

	Relative Standing Per Cent
High pressure steam, stationary power and heating plants	44.79
Furnaces for metallurgical manufacturing and other processes	29.80
Steam locomotives	21.83
Low pressure steam and other stationary heating plants	2.87
Steam vessels	0.61
Gas and coke plants	0.10
	100.00

SOLID CONSTITUENTS OF STEAM LOCOMOTIVE SMOKE

Information concerning the solid constituents of locomotive smoke has been derived from two series of investigations made by the committee in which the solids discharged from the smoke stack were measured. These embrace service tests conducted in connection with locomotives operating in yard and transfer service within the area of investigation, and laboratory tests conducted in connection with a locomotive mounted on a testing plant and supplemented by tests on locomotives operating in through passenger, through freight and suburban services in the area of investigation, to determine rates of combustion. By means of special apparatus all or a known portion of the solid emissions from the smoke stack were caught and deposited in an arrester from which they could be collected for analysis. The samples were classified as follows:

Coarse cinders—Solid particles which remain upon a coarse sieve of 20 meshes to the inch (400 apertures per square inch).

Fine cinders—Solid particles which pass through the coarse sieve and remain upon a fine sieve of 200 meshes to the inch (40,000 apertures to the square inch).

Fuel dust—Solid particles which pass through the fine sieve.

The road tests were conducted with suitable apparatus for obtaining a known proportion of the cinders emitted from the stack. A record of the number of scoops of coal fired was taken, the average weight of a scoopful of coal being ascertained by experiment, and with this information the relation between the solid constituents of locomotive smoke and the fuel consumed was established. Forty-one tests were conducted on steam locomotives operating in yard and transfer services of Chicago terminals. Bituminous coal was used for some of these tests and Pocahontas coal for others. Table I gives the results of these tests.

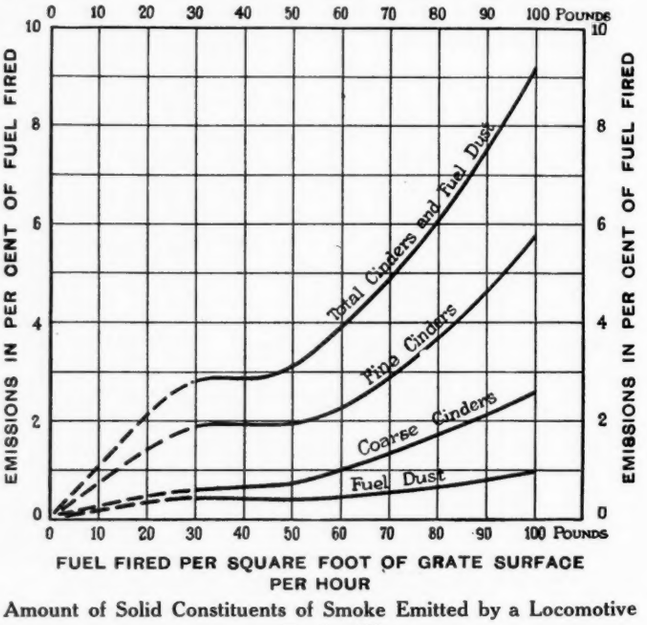
Since any method which could be satisfactorily applied in service was found impracticable for determining the amount of solid matter contained in smoke arising from locomotives while operating at high speed, data relating to the amount of solids emitted in smoke at various rates of combustion was secured by means of a series of tests conducted at the locomotive testing laboratory of the Pennsylvania Railroad at Altoona. The locomotive used in all laboratory tests was a Consolidation freight locomotive of the Pennsylvania type H-8-B, weighing 238,300 lb. The coal for the test was typical of that used by the railroads entering Chicago. The locomotive firebox was equipped with a brick arch and all tests were conducted with the throttle fully open, the speed being controlled by the load. The facts recorded for each test included the amount of fuel consumed, the cinders and fuel dust emitted, the ash and clinkers discharged, the water evaporated, the tractive effort exerted, the power developed, the draft at different rates of combustion, and such other facts as were needed to define completely the performance of the locomotive. A total of 76 tests were made. The maximum rate of combustion for each sample of fuel tested was more than 80 lb. per square foot of grate surface per hour, and in all except two cases was more than 100 lb. per square foot of grate surface per hour. The minimum rate of combustion for the several coals varied from 23 to 27 lb. per square foot of grate surface per hour. The accompanying diagram shows the percentage of the fuel burned which appears as solids in the smoke as averaged from all the tests made. It is shown by this diagram that the amount of solids emitted in smoke is a function of the rate of combustion. To establish these rates of combustion attending the normal operation of locomotives in through and suburban services in Chicago a series of 298 tests was made on locomotives operating within the area of investigation. The rate of fuel consumption was found by counting the scoops of coal fired, the value of the average scoopful having been carefully determined. The grate area of each locomotive was obtained from the railroad and all the rates of combustion determined. These were found to be for the several services involved, as follows:

TABLE I—EMISSION OF CINDERS IN YARD AND FREIGHT TRANSFER SERVICE

Service	Number of tests	Kind of fuel	Solids per ton fired (lb.)				Solids in per cent of fuel fired			
			Coarse	Fine	Dust	Total	Coarse	Fine	Dust	Total
Yard	5	Pocahontas	1.30	9.72	24.54	35.56	0.065	0.486	1.227	1.778
Yard	26	Bituminous	0.76	3.42	5.24	9.42	0.038	0.171	0.262	0.471
Freight transfer	3	Pocahontas	1.84	7.92	19.64	29.40	0.092	0.396	0.982	1.470
Freight transfer	7	Bituminous	0.62	2.16	4.46	7.24	0.031	0.108	0.223	0.362

Service	Lb. per sq. ft. grate surface per hour	Per cent of fuel fired while running
Road freight	40.6	92.7
Through passenger	52.2	98.2
Suburban passenger	62.7	96.4

By combining these rates of combustion with the values for the emission of cinders as set forth in the diagram, and by multiplying the values ascertained by the percentage of fuel fired while running, the emission factors for solids emitted by locomotives operating within the area of investigation were established. The emission factors for solid constituents of locomotive smoke thus determined, and also those for yard and passenger service, as


0 10 20 30 40 50 60 70 80 90 100 Pounds
EMISSIONS IN PER CENT OF FUEL FIRED
Total Cinders and Fuel Dust
Fine Cinders
Coarse Cinders
Fuel Dust
FUEL FIRED PER SQUARE FOOT OF GRATE SURFACE PER HOUR

Amount of Solid Constituents of Smoke Emitted by a Locomotive on a Testing Plant

determined by use of the cinder arrester in service tests, are presented in Table II.

RELATIVE IMPORTANCE OF THE STEAM LOCOMOTIVE AS A SOURCE OF SMOKE

Table III gives the relative information concerning the importance of the various classes of steam locomotives as a source of smoke, the individual classes being compared to each other and to all other classes of smoke producers. The questions of fuel consumption, visible smoke, solids in the smoke and gases in the smoke are considered. It was also shown that the steam locomotives consume 11.94 per cent of the total fuel consumed within the city limits of Chicago, ranking fourth as a fuel consuming service. They are responsible for 22.06 per cent of the total visible smoke discharged within the city, and rank third among all services on the basis of total quantity of visible smoke produced. They are responsible for 7.47 per cent of the total solid constituents discharged into the atmosphere in the smoke of all services within the city limits of Chicago, ranking fourth among all services on this basis, and lastly, they are responsible for 10.31 per cent of the total gases of combustion discharged into the atmosphere, ranking fourth in this respect.

TABLE II—EMISSION FACTORS FOR SOLID CONSTITUENTS OF STEAM LOCOMOTIVE SMOKE

Service	Kind of fuel	Solids in lb. per ton of fuel burned				Solids in per cent of fuel burned			
		Coarse	Fine	Dust	Total	Coarse	Fine	Dust	Total
Yard	Pocahontas	1.30	9.72	24.54	35.56	0.065	0.486	1.227	1.778
Yard	Bituminous	0.76	3.42	5.24	9.42	0.038	0.171	0.262	0.471
Road freight	Bituminous	11.30	34.68	6.86	52.84	0.565	1.734	0.343	2.642
Freight transfer	Pocahontas	1.84	7.92	19.64	29.40	0.082	0.396	0.982	1.470
Freight transfer	Bituminous	0.62	2.16	4.46	7.24	0.031	0.108	0.223	0.362
Passenger transfer	Pocahontas	1.30	9.72	24.54	35.56	0.065	0.486	1.227	1.778
Passenger transfer	Bituminous	0.76	3.42	5.24	9.42	0.038	0.171	0.262	0.471
Through passenger	Pocahontas and bituminous	15.08	39.40	7.84	62.32	0.754	1.970	0.392	3.116
Suburban passenger	Bituminous	20.54	47.42	9.26	77.32	1.032	2.371	0.463	3.866

TABLE III—CONTRIBUTIONS MADE BY STEAM LOCOMOTIVES TO THE POLLUTION OF THE AMOSPHERE OF CHICAGO

Service	Fuel consumption, per cent	Visible smoking per cent	Solids in smoke, per cent	Gases in smoke per cent
Yard	5.97	10.25	1.73	5.17
Road freight	0.77	2.01	1.18	0.66
Freight transfer	2.02	4.59	0.43	1.74
Passenger transfer	0.12	0.19	0.04	0.10
Through passenger	1.01	2.07	1.80	0.89
Suburban passenger	0.88	1.54	1.97	0.74
Locomotive terminals	1.17	1.41	0.32	1.01
All other classes of smoke producers	88.06	77.94	92.53	89.69

PERFORMANCE OF ILLINOIS AND INDIA COAL

The following is a more detailed description of the test made by the committee on the Consolidation locomotive at the testing plant of the Pennsylvania Railroad at Altoona. The tests were planned for the prime purpose of establishing facts with reference to the smoke discharges of steam locomotives, and to show also the value of the brick arch in the locomotive firebox as a factor promoting economy in the use of fuel, a reduction of cinders and fuel dust in smoke, a reduction of the density of visible smoke, reduction of loss of heat units in smoke and ash discharges, and boiler efficiency. The value of experience in locomotive firing as a factor in promoting economy of fuel consumption, a reduction of cinders and fuel dust in smoke, a reduction in the density of visible smoke and in boiler efficiency was also considered.

A total of 75 tests were made, in 56 of which the locomotive firebox was equipped with a brick arch and in 19 the arch was removed. Sixty-four tests were made with experienced firemen and 11 were made with inexperienced firemen. The coals selected for this series of tests were representative of the coals burned in locomotives operating in the Chicago terminals. Coals were obtained from the following 10 counties: Macoupin, Ill.; Marion, Ill.; Saline, Ill.; Sangamon, Ill.; Vermilion, Ill.; Williamson, Ill.; Greene, Ind.; Sullivan, Ind.; Vermilion Ind., and Vigo, Ind. The coal from Saline, Ill., has an average heat value of 13,247 B.t.u., while the other nine varied between 11,227 and 11,919, with an average of 11,598 B.t.u. per lb. In Table IV are given the general averages obtained from these tests. They are divided into three classes. The first class is an average of the ten coals, fired with a brick arch; the second gives the results of the coal from Macoupin, Ill.; Williamson, Ill.; Sullivan, Ind., and Vermillion, Ind., without the brick arch; while the third gives the results of these same coals with the brick arch.

TABLE IV—AVERAGE RESULTS OF THE ALTOONA TESTS

Group*	BA—10	NA—4	BA—4
Equivalent evaporation per pound dry coal (lb.)	9.3	8.6	9.2
Boiler efficiency (per cent)	67.7	63.4	67.2
Dry coal per dynamometer horsepower hour (lb.)	4.3	4.6	4.3
Smoke densities (per cent)	23.6	36.5	24.1
Cinders and fuel dust (per cent of fuel fired)	4.56	5.56	4.18
Carbon contained in the cinders and fuel dust (per cent of fuel fired)	3.11	3.79	2.88

* BA—10 = Average of 10 different coals with the brick arch.
NA— 4 = Average of 4 different coals without the brick arch.
BA— 4 = Average of 4 different coals with the brick arch.

From the results of these tests the following summary of the advantages of the brick arch in the firebox were determined:

Increases in number of pounds of water evaporated per pound of coal from 8.6 to 9.2.

Increases of boiler efficiency from 63.4 per cent to 67.8 per cent.

Decrease in the amount of coal consumed per dynamometer h.p.-hour from 4.6 lb. to 4.3 lb.

Decrease in average density of visible smoke emissions from 36.5 per cent to 24.1 per cent.

Decrease in the total average quality of cinders and fuel dust emitted in smoke from 5.56 per cent to 4.18 per cent of the fuel fired.

Decrease in the number of heat units per pound of cinders in fuel dust emitted in smoke from 9,610 B.t.u. to 9,064 B.t.u.

Decrease in the amount of carbon contained in cinders and fuel dust per ton of coal consumed, from 75.8 lb. to 57.6 lb.

Decrease in the number of heat units contained in the ash and clinker discharges per pound of fuel fired, from 6.28 to 4.98.

Decrease in volume of air intermingled with the gases of combustion, discharged through the stack, from 26.5 per cent to 22.5 per cent.

Increases of the portion of the carbon in the fuel which combines with oxygen to form carbon dioxide, from 51.1 per cent to 53.2 per cent.

Table V gives the results obtained with experienced and with inexperienced firemen operating the locomotive at 80 revolutions per minute and at 25.6 per cent cut-off, burning coal with and without the brick arch in the firebox. The first column is an average of the coals obtained from Marion, Saline, Sangamon,

TABLE V—RESULTS OF TESTS WITH EXPERIENCED AND INEXPERIENCED FIREMEN

Test Group*	BA—9—E	BA—9—I	NA—2—E	NA—2—I
Dry fuel fired per sq. ft. grate surface per hr., lb.	46.1	57.5	51.5	55.6
Equivalent evaporation per sq. ft. H. S., per hour	7.1	7.2	7.0	7.1
Equivalent evaporation per lb. dry coal	9.7	8.0	8.6	8.2
Boiler horsepower†	700.4	707.7	684.7	711.0
Efficiency of boiler based on fuel per cent	73.2	59.7	65.2	62.7
Dry fuel per dynamometer h.p. hr., lb.	3.9	5.2	4.3	4.6
Thermal efficiency of locomotive based on fuel, per cent	5.0	3.9	4.7	4.5
Average smoke density, per cent	18.	36.	27.	31.
Cinders and fuel dust in per cent of fuel fired	3.44	4.00	2.37	2.98

* BA—9—E = Average of 9 different coals with the brick arch and experienced firemen.
BA—9—I = Average of 9 different coals with the brick arch and inexperienced firemen.
NA—2—7 = Average of 2 different coals without the brick arch and with experienced firemen.
NA—2—I = Average of 2 different coals without the brick arch and with inexperienced firemen.
† One boiler horsepower =34.5 lb. equivalent evaporation per hr.

Vermilion and Williamson counties, Ill.; and Greene, Sullivan, Vermilion and Vigo counties, Ind. The last two columns in the table consider the coal from Macoupin and Williamson counties, Ill.

When burning the same kinds of coal in a locomotive firebox equipped with a brick arch, firing by inexperienced firemen, as compared with that by experienced firemen, results in the following:

An increase in fuel consumption from 46.1 lb. to 57.5 lb. of fuel fired per sq. ft. of grate surface per hour.

An increase in boiler horsepower from 700.4 to 707.7.

A decrease in boiler efficiency from 73.2 per cent to 59.7 per cent.

An increase in fuel consumed per dynamometer horsepower from 3.9 lb. to 5.2 lb.

An increase in smoke density from 18 per cent to 36 per cent.

An increase in cinders and fuel dust discharged in smoke from 3.44 per cent to 4.00 of the fuel fired.

A decrease in thermal efficiency from 5.0 to 3.9 per cent.

A similar comparison of the values obtained when firing the same kinds of coal in a locomotive firebox not equipped with a brick arch shows that firing by inexperienced firemen results in the following:

An increase in fuel consumption from 51.5 lb. to 55.6 lb. of fuel fired per sq. ft. of grate surface per hour.

An increase in boiler horsepower from 684.7 to 711.0.

A decrease in boiler efficiency from 65.2 per cent to 62.7 per cent.

An increase in fuel consumed per dynamometer horsepower from 4.3 lb. to 4.6 lb.

An increase in smoke density from 27 per cent to 31 per cent.

An increase in cinders and fuel dust discharged in smoke from 2.37 per cent to 2.98 per cent of the fuel fired.

A decrease in thermal efficiency from 4.7 per cent to 4.5 per cent.

LEGISLATIVE PROPOSALS OF THE BROTHERHOODS

BY W. L. STODDARD

WASHINGTON, December 22.

President Wilson will not oppose such safety legislation as may be pressed upon Congress by the representatives of the railroad brotherhoods. When, in his annual message to Congress, the President declared that before further railroad legislation is attempted the whole field of railroad law and practice should be surveyed by a special commission, he did not intend to shut the door to measures proposed in the interests of safety. At least, this is what Mr. Wilson is reported to have told H. E. Wills, P. J. McNamara, Wm. H. Clark and Val Fitzpatrick, railroad brotherhood agents, who waited on him last week.

The brotherhoods have as yet proposed no bill to the present Congress, but they evidently intend again to ask for a law prescribing clearance limits for cars and engines. It was this proposition, in the La Follette bill, as may be remembered, that President Taft referred to in a message to Congress, declaring that its enactment would impose a burden of more than $400,000,000 on the railroads, and recommending that the same result should be sought by other, presumably non-legislative, means.

Representatives of the brotherhoods here now propose to have the suggested clearance figures apply only to new cars and engines with the view of dealing with existing equipment later. In drafting such legislation it would be the aim to try to disarm the opposition of the railroads, and the less radical the proposals the better chance of being passed by Congress.

It is believed that this plan was outlined to the President at last week's conference.

In this connection it is worth recording that the brotherhoods are announcing that they will work for the passage of an amendment to the sixteen-hour law fixing a minimum penalty of $100 for violations as recommended by the Interstate Commerce Commission in its annual report a week ago.

The brotherhoods apparently do not intend at this session to press the proposed amendment to the Federal employers' liability law nor the bill to limit the length of trains; while the question of semi-monthly or weekly payment of wages, regulation of loan sharks, and a law allowing men who are away from home to vote by mail have been put aside from the national field as properly belonging to the province of the states.

The joint resolution for a joint committee of the House and Senate to look into railroad matters was ordered printed in the Record the other day. It bears the authorship of Senator Newlands, of Nevada, and has a long preamble to the effect that numerous bills on this subject are now pending, that numerous recommendations of the Interstate Commerce Commission call for attention, that the experience of the past 28 years ought to be reviewed, that the commission is overworked, and that well-managed transportation facilities are a prime necessity of business prosperity and a common interest of all the people. The resolution calls for a joint sub-committee to consist of five senators and five representatives from the respective interstate commerce committees of the two houses; the sub-committee to have power to do whatever is necessary for a full and comprehensive study, and to report in December, 1916.

A few bills relating to transportation have already been introduced in the new Congress. In both houses there is a proposition to amend the Cummins' amendment so that shippers of baggage and express need not in all cases declare the value of goods offered for transportation. Senator Pomerene, of Ohio, has introduced a bill to define straight and order bills of lading and to codify the conditions on bills of lading. Senator Clapp, of Minnesota, has introduced a bill on the same subject.

In the house there is a bill to increase the period of time within which claims for damage to freight may be presented to carriers and another forbidding the granting of credit on freight bills for longer than ninety days. Representative Adamson, of Georgia, has introduced in the house a bill to increase the number of interstate commerce commissioners from seven to nine and to increase the salary of the secretary of the commission from $5,000 to $7,500. Mr. Rayburn, of Texas, has introduced a bill to give the interstate commerce commission control over the issuance of securities by carriers.

The American Federation of Labor announces a long program of legislation which it will ask for, among which are a proposal to limit the working hours of railroad telegraphers to eight per day; a compensation act for railroad employees engaged in interstate commerce; and a law to prohibit the interstate transportation of goods in the manufacture of which the labor of children under a certain age have been employed.

SEGREGATION AND SPONGINESS IN LADLE TEST INGOTS*

BY ROBERT W. HUNT & CO.

A recent order for the inspection of open-hearth steel rails was of such a character as to demand a check of the manufacturer's chemical analysis of each heat represented, and the results of our analysis differed so widely from those reported by the mill that it was finally deemed advisable to make some investigation of matters pertaining to ladle test ingots, and principally to the possibilities of their segregation and soundness. What has been known to exist for a long time became apparent at the outset of our investigation, that ladle test ingots were subject to unsoundness and segregation exactly as are all large ingots, the only difference being one of degree. Obviously as long as this condition exists, it is manifestly impossible to expect analyses of the same test ingot by different chemists to agree within the limits of possible chemical error unless drillings for the samples are taken with special care and mixed and divided so as to insure both chemists working on identical lots. But of much greater importance is the fact that when the ladle test ingot is segregated and unsound, the drillings taken from it may not be representative of the steel or heat as a whole, and the reported results are therefore misleading and inaccurate. Thus a heat of steel can be reported as 0.60 per cent for carbon, while as a matter of fact, it was

* Abstracted from Bulletin 179 of the American Railway Engineering Association.

actually 0.75 per cent, and vice versa. These figures are not exaggerations but are the differences reported by two chemists on drillings from the same test ingot.

At the mill at which we were engaged the ladle test ingot mold was about 2½ in. sq. at the top, 2 in. sq. at the bottom and 5 in. high. Depending on the amount of steel poured into it and the extent of its boiling, or raising up of the top, the resulting ingots varied in height from 3 to 6 in., and when they were drilled, in order to obtain the sample for analysis, many cavities were encountered. In some instances it became necessary to take drillings from two different locations on the same ingot and in such cases the chemical results varied by as much as 0.15 per cent carbon (by combustion).

Samples of ladle test ingots were taken from the same heat of open-hearth rail steel and split open to show the interior structure. The metal near the outside of the ingots differed from that near the inside and the location of the drillings with respect to the height particularly, also gave different results. The degree of porosity is apparently somewhat greater in the ingot from the first part of the heat than that from the last part of the heat, and further, that the addition of the deoxidizing agent, ferro-silicon, experimentally in one case, made that ingot absolutely sound for most of its height.

Soundness, viz.: freedom from blow holes, etc., is a very important feature for ladle test ingots to possess. In the first place, the more unsound one is the more it is inclined to be segregated, and secondly, in drilling steel that is full of blow holes, minute particles break off from the sides of the holes and render the chemical determination for carbon by combustion methods more difficult of accuracy than when thin flake-like drillings are furnished. It is quite evident that the soundness of the test ingot is not predicated by its shape. At the same time it is logical to regard a thin slab-like shape as preferable, because of its tendency to chill quickly and thus solidfy with a minimum degree of segregation. The disadvantage of this shape of test ingot lies principally in the difficulty of obtaining sufficient drillings to provide for the requisite number of anaylses.

The addition of a deoxidizing agent to insure a sound setting steel and a ladle test ingot free from blow holes is more or less common practice at some mills, and commercially pure aluminum in the form of pellets is admirably adapted for this purpose.

Based on the experience of the past, we feel constrained to recommend such additions to rail specifications as will provide:

First—A standard shape and size for ladle test ingots with directions as to the size of drill and location of the borings on which the analysis is made.

Second—The addition of aluminum, preferably in the dipper, when necessary to insure a sound setting steel in the ladle test ingot with freedom from blow holes.

In conclusion, we submit that the location of the test ingot in the heat with respect to the regular ingots cast, is also deserving of consideration, as is also the precise method of making the analysis for the various chemical elements.

TURKISH RAILWAY CONCESSIONS.—In November, 1914, within a week of Turkey's declaration of war, the Ottoman government not only took over the working of the railways, which it had a perfect right to do under the terms of their concessions, but also interfered with their administration and finances. The French manager of one railway was thus bluntly asked to resign in favor of the manager of the Hedjaz Railway, a German, and the government also determined to seize $200,000, which the French manager had on his departure deposited with the Ottoman Bank at Beirut. In order to overcome the legal difficulties in the way, a special law was passed empowering the seizure of funds deposited with banks by companies carrying on their business under concessions, and this $200,000 was then used by the Ottoman government for the construction of military lines.

LOCATION OF PASSING SIDINGS ON SINGLE TRACK*

BY F. L. DODGSON
Consulting Engineer, General Railway Signal Company, Rochester, N. Y.

In considering the effect of passing-siding locations on the capacity of a single-track railroad, it would seem to be the most logical thing to first determine, if possible, what rule or rules, if any, must be followed in order to so locate the sidings that the maximum capacity of the road will be obtained.

With this view, let us first assume a piece of level railroad 40 miles long over which we are to operate one class of trains only, these trains traveling at a uniform speed of 20 miles an hour. Fig. 1 is a train diagram of such a road with the distance the vertical lines and the time the horizontal lines. If there were no sidings on this road, two trains could be run (one in each direction) each four hours during the day. These two trains are shown on the diagram by the two heavy lines aW and aE. If, now, we assume that there is one passing siding on the road, it is quite evident that the maximum capacity would be reached with this siding located exactly in the center of the road. With this arrangement two additional trains could be run each four hours and they are shown on the diagram by the lines bE and bW. If we represent the time required for the westbound train to run from E to C (C being the siding location) by W1 and the time required for the same train to run from C to A by W2; likewise the time required by the eastbound train to run from A to C by E2, and the time required to run from C to E by E1; and represent by S the spacing in time between trains running in the same direction; we shall find by inspecting the diagram that:

$$(1)\quad S = W2 + E2$$

and

$$(2)\quad S = W1 + E1.$$

Therefore:

$$(3)\quad W2 + E2 = W1 + E1.$$

Or, if we state this last equation in words, it means that the sums of the running times of an eastbound and a westbound train between sidings are equal.

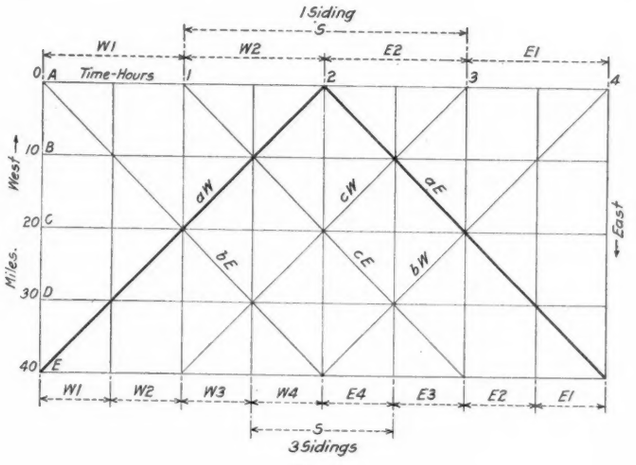


Fig. 1

Now let us continue and add two more passing sidings to our railroad. Again it is quite obvious that the maximum capacity will be obtained if these two additional sidings are located exactly midway between A and C, and C and E. If, as before, we represent the running time of the westbound train from E to D by W1, D to C by W2, C to B by W3, and B to A by W4 (B and D being the locations of the two new sidings); and also the running time of the eastbound train from A to B by E4, B to C by E3, C to D by E2, and D to E by E1; and

* A paper presented to the Railway Signal Association at its annual meeting, Salt Lake City, September 14.—Abridged.

as before make S the time spacing between trains in the same direction; we shall find from the diagram that:

$$S = W1 + E1 \quad (4)$$

and

$$S = W2 + E2 \quad (5)$$

and

$$S = W3 + E3 \quad (6)$$

and

$$S = W4 + E4. \quad (7)$$

Therefore:

$$W1 + E1 = W2 + E2 = W3 + E3 = W4 + E4.$$

Again this last equation stated in words means that the sums of the running times of trains in opposite directions between passing sidings are all equal.

From this simple diagram, Fig. 1, it will appear, therefore, that the maximum capacity of the railroad, with a given number of passing sidings, would be reached when the sums of the running times of the east and westbound trains between passing sidings were all equal.

We can determine the value of S quite readily as follows: by adding equations 1 and 2 we have:

$$2S = W1 + W2 + E1 + E2 \quad (8)$$

or, representing W1 + W2 by W, the total running time of the westbound train, and, similarly, E1 + E2 by E,

$$S = \frac{W + E}{2} \quad (9)$$

which is the value of S when there is only one passing siding.

Again, if we add equations 4, 5, 6 and 7, we have:

$$4S = W1 + W2 + W3 + W4 + E1 + E2 + E3 + E4 \quad (10)$$

or

$$S = \frac{W + E}{4} \quad (11)$$

If we let N equal the number of passing sidings, then, in equation 9, $2 = N + 1$, and, in equation 11, $4 = N + 1$. Therefore, by substituting in equations 9 and 11, N for the number of sidings, we obtain the formula:

$$S = \frac{W + E}{N + 1}$$

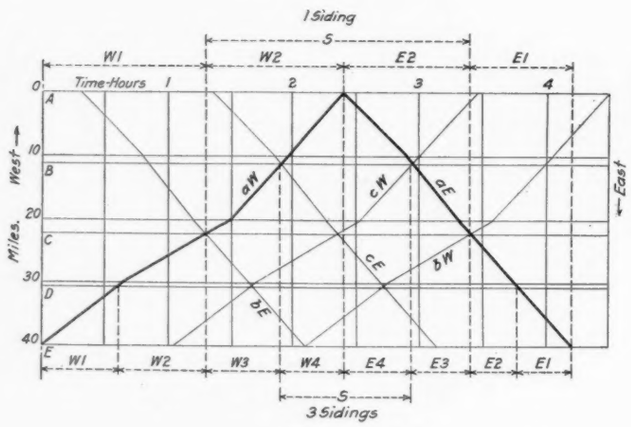


Fig. 2

To construct a diagram for varying and unequal speeds, the lines representing trains in the same direction may be plotted at intervals determined by the formula, $S = \frac{W + E}{N + 1}$, for a given number of passing sidings, as in Fig. 2. The intersections of the lines representing opposing trains will then fix the locations of those sidings for maximum capacity.

It will be apparent here, as before, that the sum of the running times between A and B is equal to the sum of the running times between B and C, etc. The rule, therefore, which we first laid down seems to hold true when the running times are unequal and speeds not uniform.

It is quite obvious that the number of trains per day, which we will represent by T, will be $T = \frac{1{,}440 \times 2}{S}$ (1,440 being minutes in a day and S being expressed in minutes).

In Fig. 3 allowance is made for the time lost at the siding, represented by *a* (½ *a* entering and ½ *a* leaving), and by a stop for water at mile-post 15. Then

$$S = W1 + E1 + \frac{a}{2} + \frac{a}{2};$$

also

$$S = W2 + E2 + \frac{a}{2} + \frac{a}{2};$$

or

$$2S = W1 + W2 + E1 + E2 + a + a$$

or

$$S = \frac{W + E + 2a}{2}$$

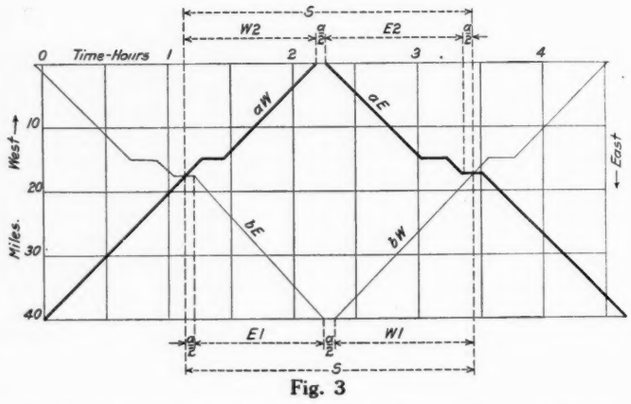


Fig. 3

If N equals the number of passing sidings, then substituting in the last equation N + 1 for 2 we have:

$$S = \frac{W + E + (N + 1)\,a}{N + 1}$$

Substituting this value of S in

$$T = \frac{1440 \times 2}{S}$$

we have

$$T = \frac{2880\,(N + 1)}{W + E + (N + 1)\,a}$$

In other words the maximum number of trains of one class that can be run in 24 hours over a piece of railroad equals 2,880 times the number of passing sidings plus 1, divided by the sum of the running times of an east and a west bound train over the road, plus the number of sidings plus 1 multiplied by the delay caused by a train taking the passing siding.

If trains were run in one direction in two sections and in one section in the opposite direction, the train diagram would look like the following:

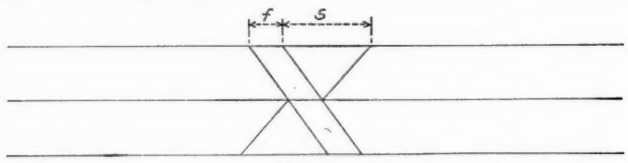


Fig. 3a

If we let f represent the time spacing between following trains, then the number of trains in 24 hours would be:

$$T = \frac{1440 \times 3}{S + f}$$

Substituting in this equation the value of S for maximum capacity we have

$$T = \frac{4320\,(N + 1)}{W + E + (N + 1)\,a + (N + 1)\,f}.$$

If passing tracks were of sufficient capacity, both the east and west bound trains could be run in two sections, in which event we should have:

$$T = \frac{1440 \times 4}{2 + 2f}$$

or, substituting the value of S,

$$T = \frac{5760\,(N + 1)}{W + E + (N + 1)\,a + (N + 1)\,2f}$$

Let us now consider for a moment the effect the number of passing sidings has on the capacity. Going back to Fig. 1, it will be seen that with one passing siding there are four trains

in a certain time, that time being the sum of the total running times of the two trains. Further, with three passing sidings, there are eight trains in the same time, and if we continue adding passing sidings we shall find that, with seven passing sidings, there will be 16 trains and with 15 passing sidings, 32 trains, and so on. In other words, if we neglect for the moment the delay caused by one train meeting another, we can say that, in a time that is equal to the sum of the running times of the two trains over a certain territory, there will always be two more trains than twice the number of passing sidings. But while the capacity increases rapidly as the number of passing sidings is increased, the time required to cover the territory is rapidly increased. To arrive at this increase in running time, if we let R represent the average running time of the two trains, we can readily construct the following formula:

$$R = \frac{W + E + (N + 1)\,a}{2}$$

in which (N + 1) a is the total time required for the meeting of trains when there are N passing sidings.

This formula is also based on a schedule in which a train in one direction meets a train in the other direction at every passing siding. If trains are run in two sections in one direction, our formula then becomes:

$$R = \frac{W + E + (N + 1)\,a + Nf}{2}$$

and likewise, if trains are run in two sections in both directions, then our formula becomes:

$$R = \frac{W + E + (N + 1)\,a + N2f}{2}$$

In order to show a practical example of the application of the formulas which we have set forth in the foregoing, we have chosen an actual piece of railroad about 34 miles long on which there are six passing sidings at B, C. D, E, F and G, A and H being the two terminals. The running time for full-tonnage trains without stops is shown in the second and third columns of Table I, these being given between passing sidings. On this road the westbound trains take the siding and there is one water stop, this water stop being located at siding C. Siding C is a lap siding and the water crane is at the lap, so that an eastbound and a westbound train can both be taking water at the same time.

TABLE I

	Running time without stops			Original Siding Location Full schedule running time				Siding G Moved Full schedule running time			
1 Sta.	2 W.B.	3 E.B.	4 Sum	5 W.B.	6 E.B.	7 Sum	8 D.[1]	9 W.B.	10 E.B.	11 Sum	12 D.[2]
A											
	16	12	28	25	12	37		25	12	37	
B											
	10	11	21	19	W23	42	11	19	W23	42	00
C											
	13	11	24	W25	11	36	17	W25	11	36	6
D											
	15	14	29	24	14	38	15	24	14	38	4
E											
	10	12	22	19	12	31	22	19	12	31	11
F											
	16	28	44	25	28	53	00	21	21	42	00
G											
	8	9	17	17	9	26		24	16	40	
H											
	88	97					65				21

[1] Column 8—Differences between the sums of the running times and the maximum, 53.

[2] Column 12—Differences between the sums of the running times and the maximum, 42.

W—Time including water stop.

Columns 5 and 6 of the table show, westbound and eastbound, what we have called a full schedule running time, full schedule meaning that in this case we are operating trains of only this one class and that every train is meeting a train in the opposite direction at every passing siding; and we have, further, made the assumption that the time lost by a train taking the siding to meet another train would be nine minutes and the time required for a train to take water, 12 minutes. Under these assumptions, therefore, the westbound running time between A and B would be 16 + 9 or 25 minutes; between B and C would be 10 + 9 or 19 minutes. Now between C and D, as a westbound train can be taking water while on the siding and as 12 minutes only is required for the water stop, the additional time required for this train would be 13 + 12 or 25 minutes. The running time of the westbound train between D and E, E and F, F and G, and G and H, would in each case be nine minutes greater than the running time without stops as shown in the second column of Table I.

The running time of the eastbound train would be from H to C the same as shown in the third column, because this train does not take passing sidings. At the east end of siding C the eastbound train takes water. Therefore, its time between C and B would be increased by 12 minutes, the time required for the water stop. The seventh column of the table shows the sums of the running times of the two trains between the sidings plus the siding stops. It will be noticed that the maximum of these times is between F and G, and it is 53 minutes. The capacity of the road, therefore, for trains of this one class would be two trains in each 53 minutes or 54 trains per day.

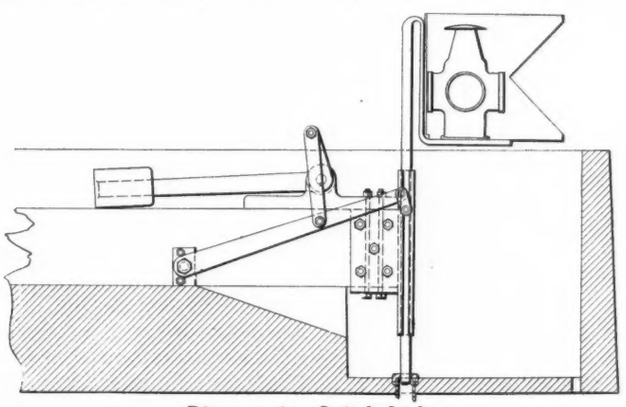
There would be a delay to each westbound train at each passing siding equal to the difference between 53 minutes and the sum of the two running times. For example, between B and C the sum of the two running times is 42 minutes and 53 minutes is allowed for these running times, so that there would be a delay to the westbound train of 11 minutes at siding C, and likewise a delay of 17 minutes at siding D. If the schedule were properly arranged, there would be no delay at siding B, because, while the sum of the running times is only 37 minutes, the westbound train would not leave A until just in time to meet an eastbound train at B. Likewise, there would be no delay at H because the westbound train would have reached its terminal. The total delay to the westbound train is, therefore, 65 minutes.

It is quite evident that, if the spacing between sidings F and G were decreased, the capacity of the road would be increased; and if siding G is the only one to be moved, it is quite obvious that it would do no good to move this siding east a greater distance than will be required to make the sum of the running times between F and G equal to 42 minutes, because the sum of the running times between B and C is 42 minutes.

When this is done the result is as shown in the last four columns of the table, and we have a maximum spacing of 42 minutes, which means two trains every 42 minutes or 68 trains per day, an increase of 14 trains from what the capacity was with siding G in its original location, or approximately an increase of capacity of 26 per cent. The delay to the westbound trains under this new arrangement totals 21 minutes, a saving in the running time of the westbound trains under full schedule of 44 minutes per train.

WILLIAMS' DISAPPEARING SWITCH LIGHT

This is a switch light fixed to the end of the tie at a switch and arranged to drop into a small pit when the track is set for the main line, so that it will be visible only when the switch is set for the side track. When set to show, the light appears just above the level of the tie as indicated in the illustration. It



Disappearing Switch Light

is moved up and down by levers, the arrangement being similar to that of the ordinary ground switch lever. The target, of sheet metal, is cut out and the lamp is set into it. The pit is arranged with a steel cover, to be locked when the switch is set straight. This keeps out rain and prevents the lamp from being tampered with.

This lamp has been in use at the Bakersfield (Cal.) terminal of the Southern Pacific for something over a year, and is well spoken of by those who have had experience with it.

The proprietor is E. F. Hartzell, East Bakersfield, Cal. He says that he has two more under construction. Making them on a small scale, he finds the cost of the whole outfit about $25 each.

A HISTORY OF THE LITTLE KANAWHA SYNDICATE

The Interstate Commerce Commission has made its report in the investigation of the ownership, management and control of the Little Kanawha Railroad in accordance with the resolution of the United States Senate calling upon the commission to make such an investigation. The commission's findings bring out the fact that the Little Kanawha was to have been used by the Goulds and Joseph P. Ramsey to form a part of the connection between the Wabash-Pittsburg Terminal and the Western Maryland. Very much condensed and in substance the findings of the commission are as follows:

The Little Kanawha Railroad is now being operated between Parkersburg, W. Va., and Owensport by the Baltimore & Ohio as agent for the stockholders. Of the 5,095 shares of stock of the Little Kanawha, 4,781 are jointly owned by a combination of the Pittsburgh & Lake Erie, the Pennsylvania Company and the Baltimore & Ohio. The Pittsburgh & Lake Erie owns half of this joint stock and the Pennsylvania Company and the Baltimore & Ohio one-quarter each. The purchase of the Little Kanawha Railroad Company's stock was made in order to obtain coal properties in Gilmer, Braxton and Lewis counties, W. Va., and the railroad has been operated at a loss since 1906 and is not being held to tie up and prevent the development of the Little Kanawha Valley. The road is now for sale. In 1901 George J. Gould, Joseph Ramsey, Jr., and William E. Guy organized the Little Kanawha syndicate after having bought the Little Kanawha Railroad. The former stockholders of the railroad received about $8.09 per share for their stock. A total of $6,310,104 was subscribed by the syndicate for the extension of the Little Kanawha, purchase of other railroads and purchase of coal lands. Construction work on the extension of the Little Kanawha was actually begun and contracts had been entered into with McArthur Brothers for the work. When the Gould scheme for a transcontinental system extending from Baltimore to San Francisco fell through, construction on the extension of the Little Kanawha was stopped and McArthur Brothers were given similar work on the Zanesville, Marietta & Parkersburg. About $429,000 had been spent on the extension.

In 1905 relations between Joseph Ramsey, Jr., who had been president of the Wabash, and George J. Gould were severed and Mr. Ramsey was left with control of the Little Kanawha. He entered into negotiations with W. H. Newman, then president of the New York Central Lines, and J. M. Schoonmaker, vice-president of the Pittsburgh & Lake Erie (a New York Central Line), and the Pittsburgh & Lake Erie finally bought the properties which Mr. Ramsey offered it in order to obtain the Kincheloe, Fulton and Arnold coal properties, aggregating about 30,810 acres. To do this they had to buy also the majority stock of the Little Kanawha and also other railroad franchises. It is estimated that the price paid was about what the coal properties would have cost and that the majority stock of the Little Kanawha was acquired practically without cost. In February, 1906, the Pittsburgh & Lake Erie sold one-quarter of this majority stock of the Little Kanawha to the Pennsylvania Company and one-quarter to the Baltimore & Ohio. The transfer of one-half of the interest in these properties was made by the Pittsburgh & Lake Erie on the basis of actual cost primarily for the purpose of sharing the burden of its investment in such properties and frachises with the Baltimore & Ohio and the Pennsylvania. The sale was in harmony with the spirit and general terms of a so-called gentlemen's agreement entered into between John Newell, when he was president of the Pittsburgh & Lake Erie, and George B. Roberts, when he was president of the Pennsylvania Railroad in the decade ended 1889.

Immediately after the purchase Mr. Schoonmaker made an inspection of the Little Kanawha and found it in a very poor condition, and found that to place it in proper condition and extend it would involve the expenditure of a large amount of money. No effort was therefore made to extend the road and efforts have been and are being made by the owners to sell their stock in the company and their coal properties.

RAILROADING FROM A GENERAL STOREKEEPER'S POINT OF VIEW*

By J. G. STUART
General Storekeeper, Chicago, Burlington & Quincy

It was a common mistake some years ago to think because a man or a department used the material they would be the best fitted to care for it. This idea has died out to a great extent. It is certain that no superintendent or master mechanic fully alive to the interest of his own department has the necessary time to look after material he is using, and if his department is in charge of material it is certain he will not look after it individually, but will assign these duties to some one of his force. The best plan would seem to be to make the store department responsible for all material and let all departments look to it for supplies.

Like all other departments the store department is expected to pay dividends, or, in other words, to make a showing. A good showing for the store department consists among other things in the following: Service; reduced investment and economics in handling. While a small investment is very desirable, nevertheless, if the investment is reduced so that the service is curtailed, it is in many cases more expensive than to maintain a greater investment. By service I mean the ability to supply the generally used or standard items of material within a reasonable time after the order for them is received. To maintain a supply of standard material is a difficult matter, as the use of standard material is not and cannot be regular.

In practically all storehouses a stock book is kept, which, though different on the various roads, is yet similar in its general principle. Although the stock book is not by any means perfect, it is a great advance over the old "hit and miss" way of ordering which was in effect some years ago. In the minds of many the figures showing past consumption in the stock book are supposed to dictate what material is to be ordered for the future. This is an entirely wrong impression, as the figures are only used as a basis on which to order for the future. Good storekeeping begins with these figures, and the knowledge a storekeeper has of future conditions as compared with past conditions enables him to place his order for what in his judgment will be needed and not to follow arbitrarily any figures showing past usage.

Reduced Investment.—Reduced investment is placed second to service. Some time ago one of our large railroads figured it cost about 12 per cent per annum to carry material, that is, for every dollar's worth of material carried for one year it cost the railroad practically 12 cents to cover the interest on the investment, insurance, taxes, loss and damage through breakage, leakage or becoming defective or obsolete and by extra handling. These figures may not be absolutely correct, but they are not very far out of the way. To prevent this loss it is important that material be kept moving and not allowed to remain in

* Abstract of paper presented at the October meeting of the Western Railway Club.

stock longer than is absolutely necessary. Assuming 12 per cent to be correct, then a railroad reducing its investment in material by one million dollars would be able to make saving of $120,000 a year or enough to take care of the entire monthly pay roll for some of the largest shops on the line. These figures, of course, are large, and large figures are generally too far away to be of much help.

Suppose a superintendent started over his division the first of the month and saw a section man sitting reading a paper and when he returned at night the same man was still sitting there doing nothing. There is no question but what something would happen. Yet the same superintendent will, perhaps, without giving the matter more than a passing thought, permit crossing plank, switch ties, frogs or switches amounting to $300 to lie around for an entire year. The investment charges on this would amount to $36 for the year or enough to pay the section man for an entire month. It should be fully understood that material lying idle is just as expensive to the railroad as laborers sitting idle and that it is immaterial to the railroad company whether the money is paid out as investment charges or wages.

The investment in material can also be reduced by the prompt return of all unapplied material, whether new or second-hand, to the store. It is perhaps a great temptation when a superintendent gets some special tools, such as ditching spades, for a job in his territory to hold them after the particular job is finished, because he may need them again and then he may not be able to get them. Consequently they are tied up as idle capital for an indefinite time while the superintendent on the next division may need some of these same spades and for whom it would be necessary to purchase them in order to supply his needs.

Every store department acts in the nature of a clearing house and material not needed at one point is shifted to another point where it is needed.

It should be borne in mind the store department is organized in order to furnish material and it will always furnish material that is needed when the order is properly approved. The habit of holding on to material of all sorts instead of returning it to the storehouse promptly is one that is costing every railroad a considerable amount of money. In using material men are prone to overlook its value and special efforts should be made to have men approving requisitions for material fully informed as to its cost.

The concentrating of material in the storehouses enables the store department to handle a large volume of business in one place and permits the use of labor-saving handling devices which cannot be profitably used if each department handles its own material and consequently does a smaller volume of business. Establishment of lumber yards permits the use of locomotive cranes, concentration of scrap yards permits the use of overhead or gantry cranes as well as locomotive cranes.

A successful store department cannot be entirely selfish in its aims, as it is impossible for a store department to make a good showing without helping the other departments at the same time. The master mechanic or superintendent should look on the store as his store, not because he is responsible for it, but because it is the store that is supplying him with his material, in this way making it possible for him to make his own work a success or else retarding him in his work. More earnest co-operation of these departments with the store would be beneficial all around.

A more lively interest in the store on the part of master mechanics or superintendents and an occasional visit to the store would undoubtedly be a great help to the storekeeper in making a showing for the store department, which after all is merely the giving of good and efficient service to his two best customers, the master mechanic and superintendent. It would result also in a reduction in the investment, which means a reduction in the operating cost to the railroad, the thing for which all railroad officers are striving.

TRAIN ACCIDENTS IN NOVEMBER[1]

The following is a list of the most notable train accidents that occurred on railways of the United States in the month of November, 1915:

COLLISIONS

Date	Road	Place	Kind of Accident	Kind of Train	Killed	Injured
2.	Balt. & Ohio	Keswick	rc	F. & F.	3	0
†22.	Cent. Georgia	Columbus	bc	P. & F.	5	45
†23.	Southern	Salisbury	rc	P. & P.	2	20
23.	Bessemer & L. E.	Grove City	rc	F. & F.	1	0

DERAILMENTS

Date	Road	Place	Cause of Derailment	Kind of Train	Killed	Injured
8.	Baltimore & O.	Cairo, W. Va.	b. truck	F.	1	2
11.	Atlantic C. L.	Thomasville	malice	F.	1	1
13.	Denver & R. G.	Salida	b rail	P.	0	20
14.	Trinity & B. V.	Kirven	unx	P.	0	15
17.	Chicago, B. & Q.	Quincy	neg	P.	2	0
29.	St. Louis, I. M. & S.	Garber	slide	F.	4	6

The trains in collision at Keswick, Va., on the night of the 2nd, about ten o'clock, were an eastbound freight, which at the time was standing at the station, and a following train, consisting of two locomotives moving backward. The two locomotives were running at excessive speed and crashed into the standing train with sufficient force to seriously damage three cars of cattle. Three trainmen were killed. The second train—the two locomotives—had been admitted to the block section on a caution card.

The trains in collision near Columbus, Ga., on the 22nd, were an eastbound passenger train and a westbound extra train of 28 cars carrying a "carnival" company. Both engines and nine flat cars of the carnival train were wrecked. The cars of the passenger train, of steel, did not leave the rails and the baggage car only was slightly damaged. The wreck took fire from combustible matter loaded on one of the flat cars and nine cars, containing carnival equipment, were burned. Five members of the carnival company were killed, and about forty others, passengers on passenger train and members of the carnival company, were more or less injured, none seriously. Five trainmen, one mail clerk and one express messenger were injured, none seriously. The cause of the collision was overlooking and misunderstanding of orders by the men in charge of the passenger train.

The trains in collision at Salisbury, N. C., on the evening of the 24th were northbound passenger No. 32, second section, and No. 38. No. 32 was an excursion, standing at the station. No. 38 disregarded a rule on the time table which required that from signal No. 370, south of Salisbury, to the station, speed should be reduced so as to be under control. The flagman of the standing train, however, is held primarily responsible. A coroner's jury blamed the flagman and the engineman and also held the fireman negligent for failure to observe the signal on the hind end of the standing train. Two passengers were killed and twenty were injured, all in the rear car of the standing train.

The trains in collision at Grove City, Pa., on the 23rd were southbound freights. The caboose of the leading train was wrecked. The flagman was fatally injured.

The train derailed at Cairo, W. Va., on the eighth was eastbound freight No. 40, and 11 cars were badly damaged. The car which first ran off the track crashed into the station of the Cairo & Kanawha Railway. The agent of that road was killed and two other persons were injured. The derailment was caused by a broken truck.

The train derailed at Thomasville, Ga., on the evening of the eleventh was a pay car train moving slowly over a Wye track. The locomotive was overturned and the engineman and fireman

1 Abbreviations and marks used in Accident List:
rc, Rear collision——bc, Butting collision——xc, Other collisions—b, Broken——d, Defective——unf, Unforseen obstruction——unx, Unexplained——derail, Open derailing switch—ms, Misplaced switch——acc. obst, Accidental obstruction——malice, Malicious obstruction of track, etc. ——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines, work trains, etc.)——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

injured, the engineman fatally. The derailment was due to a spike which hed been placed on the rail by a negro boy, seven years old.

The train derailed near Salida, Colo., on the 13th, was eastbound passenger No. 4, and 14 passengers and six employees of the dining car were slightly injured. The derailment was caused by the breaking of a rail.

The train derailed near Kirven, Tex., on the 14th was northbound passenger No. 2. The tender was the first vehicle to leave the track, and after running about 100 ft. it came upon a trestle bridge where the bridge floor was broken up and the baggage car fell through to the creek below, about 30 ft. The second-class passenger car was overturned. Thirteen passengers and two employees were injured, none seriously. The cause of the derailment was not determined.

The train derailed near Quincy, Ill., on the evening of the 17th was a westbound passenger. The train was run past distant and home signals at the drawbridge over the Mississippi river and the engine plunged into the stream, the draw being open. The coupling at the rear of the engine was broken and the tender was left hanging over the end of the track on the fixed span. The engineman and fireman were killed.

The train derailed near Garber, Mo., on the 29th was a northbound freight, and the engine and two cars fell down a bank. Three trainmen and one trespasser were killed and six trespassers were injured. The cause of the derailment was a landslide which occurred on a sharp curve. A rock fell from the bluff just as the train was passing, overturning the engine.

RAILROAD BONDS

The following is an abstract of the report of the committee on railroad bonds and equipment trusts, L. B. Franklin, chairman, at the fourth annual convention of the Investment Bankers Association of America.

During the period of the great prosperity of our railroad systems, their securities commanded a ready market both in this country and abroad, and throughout this time the competition on the part of investment bankers for new issues of railroad bonds was keen. This condition offered an opportunity to the issuing companies to decide upon the terms of their mortgages without much regard for the wishes of the banker and the protection of the investor, and this opportunity was in too many cases availed of. The investment banker, in order to participate in the business, was forced to accept the mortgages as drawn by the counsel for the railroad company, and in every way the advantage was with the seller and against the buyer. In justice to the banker, it must be conceded that since that period conditions unfavorable to the railroad companies have arisen which could not have been reasonably foreseen.

Conditions are now reversed. The advantage is with the buyer and a wonderful opportunity is offered for constructive banking. The buyer now can demand and obtain carefully drawn trust indentures protecting the investor at every point and avoiding those dangers which have in the past few years been pointed out in the most emphatic way.

Railroad property is no more immune from depreciation and obsolescence than is other property. Considerable mileage of road is dependent upon special sources of traffic which are not in their nature permanent and bonds secured on railroad property of this kind most certainly need and should have the benefit of a sinking fund. But this is not all. Trackage, which today is of the utmost importance and worth more than the bonds upon it, may in the near future, by reason of a change in conditions, become almost worthless. Replacement value or cost is not an infallible measure of real value. Property, to have value, must have earning capacity and earning capacity is subject to change. A sinking fund is the strongest protection which can be provided against a change in value due to a change in earning capacity. It is amazing what a small amount appropriated annually will provide in fifty years an ample fund. For example, a cumulative sinking fund of ¼ of 1 per cent upon a 5 per cent fifty-year bond, callable at par, will retire more than 52 per cent of the issue by maturity, while a cumulative sinking fund of ½ of 1 per cent on a similar bond will retire the entire issue prior to maturity.

The objection of the railroads to sinking funds is that their revenues are already restricted while the Interstate Commerce Commission, which controls railroad rates, does not appreciate the need for any repayment of debt out of earnings. Here is a fertile field for work.

The committee recommends that this association place itself on record as being in favor of the repayment of railroad debt in full or in part out of earnings and make an urgent plea before the Interstate Commerce Commission for the recognition of the principle.

The committee has discussed with railroad operators the question of providing in indentures for a specified sum to be spent on the maintenance of property covered by the mortgage and is of the opinion that such a provision is not practical.

Most of the states prohibit the sale of stock by a corporation at less than its par value and therefore comparatively few of our railroad corporations are today in a position to finance any part of their requirements for betterments, improvements or extensions other than by increase of their debt. This means a continual weakening of the margin of safety over the junior securities and unless offset in some way is sure to lead to trouble in the future as it has in the past.

What is a share of stock but an evidence of part ownership in the enterprise, and why should it have a nominal value which may in no way be related to its real or even its market value?

The railroad commission of the state of California has recognized the necessity on the part of public service corporations of maintaining the equity in their property over and above their bonded debt by allowing the sale of stock, both common and preferred, at prices below par, but approved by the commission. Such practice works no hardship on the buyer of the stock or the old stockholder, but maintains for the bondholder his pro rata lien on the property. It is admitted that such sale of stock without par value must not be permitted except under proper supervision, either state or national.

Contrast the credit position today of those roads which have been able to finance to a large extent by sale of stock with those which have had to sell bonds to meet all expenditures and then consider how much better would be the position of those weaker roads, had they been allowed to sell their stocks at fair prices. This is a subject where more education is needed.

Long-term bonds should not be issued to cover the purchase of equipment or to retire maturing equipment trust installments unless such bonds are protected by a strong sinking fund or strict provisions requiring the maintenance of the equipment pledged at a value equal to the bonds issued therefor. Provisions should be made for annual examination of the equipment records by the trustee at the expense of the railroad and adequate methods provided for enforcement by the trustee of the terms of the indenture.

It is recommended that general mortgage or refunding issues be drawn without fixed limits as to maturity, amount or rate of interest, thereby providing a flexible security which can be issued from time to time under provisions in accord with conditions then existing.

The Mersey Railway.—The Mersey tunnel, under the river Mersey, connecting Liverpool with Birkenhead, was first proposed in 1860. The necessary authority was secured from Parliament in 1866, and additional powers in 1871, but it was not opened for traffic until February, 1886, when it was put in operation as a one and one-quarter mile two-tracked steam railway. Because of the difficulties of operation on the one hand and the lack of revenue resulting from the poor ventilation on the other, the Mersey Railway was not a paying venture. It was electrified in 1903, however, and since that time has actually had a new lease of life.

AN ENGLISH VIEW OF AMERICAN REGULATION

BY W. M. ACWORTH

[The following discussion of some characteristics of American regulation of railways is an extract from Mr. Acworth's review, in the Economical Journal, of Prof. William Z. Ripley's book, "Railroads, Finance and Organization." The Economic Journal is the publication of the Royal Economic Society of Great Britain.]

Professor Ripley desires to maximize public interference. One would think that a supporter of interference by public authority would necessarily postulate two things: that the authority should be intelligent, and that the authority should be honest. Professor Ripley does not assert—as indeed in view of the history he could not—that either of these prerequisites exists in the United States. As for intelligence, let us take a crucial instance. If intelligent regulation is to be found anywhere, it is surely in that highly expert and respected body, the Interstate Commerce Commission. Yet in July, 1914, after an inquiry extending over more than 12 months, the majority of that commission solemnly reaffirmed their refusal of three years earlier to permit the trunk lines to raise their rates. Under the compulsion of gross and palpable fact they reversed that decision some 6 months later. But it is safe to say that for every dollar Jim Fisk stole from the Erie—and he stole a good many—the inhabitants of the United States lost a million in the months succeeding July, owing to financial depression and trade dislocation consequent primarily on the unintelligent appreciation of the situation by the Interstate Commerce Commission.

What about honesty? In the midst of a scathing indictment of the quite recent mismanagement of the New Haven Railroad Professor Ripley enumerates among its crimes "wholesale bribery, veiled in various ways, of members of the legislature." And this is not in the far west two generations ago, but in Massachusetts yesterday. Not a word is said in reprobation of those who were bribed. Does Professor Ripley take it as a matter of course that members of the legislature will be accessible to wholesale bribery? As for honesty in other than money matters, take this instance. The Interstate Commerce Commission is at this moment engaged in hearing at Chicago the application of the railroads in the territory west of that city to be permitted to raise their rates, with which, of course, the intrastate rates are inextricably entangled. Mr. Clifford Thorne is chairman of the Iowa State Railroad Commission, and he is appearing before the Interstate Commerce Commission as counsel for (*a*) a number of western state railway commissions, including his own, and (*b*) for a private trading association which dislikes the prospect of having to pay increased rates. The American public appear to see no objection. The Interstate Commerce Commission is evidently powerless, and the simple English expedient of disbarring Mr. Clifford Thorne is presumably not available. An Englishman, considering the propriety of further private regulation of railways, takes for granted the probity of parliament and the board of trade and the railway commission. But what would he think if legislators were accused of wholesale bribery, and if commissioners were as impartial as Mr. Clifford Thorne?

Take another instance, not from a western state, but from the federal government itself. For years the railroads have claimed that the payment to them for carrying the mails, which is practically in the uncontrolled discretion of the postmaster general, is inadequate. Some three years ago they succeeded in obtaining the appointment of a joint committee of the two houses of Congress to investigate. That committee severely censured the post office department and substantially supported the railroad contention that the method of payment was bad, that the arbitrary powers of the department were unjust, and that the amount of payment was insufficient. While the committee was sitting, the postmaster general introduced and carried a bill establishing a parcel post. The original limit of weight was reasonable. It has subsequently been extended to 50 lb. No provision was made in the bill for payment to the railroads for the extra work thrown on them beyond the authorization of the postmaster general to pay to certain railroads a temporary increase not exceeding five per cent of the amount they were then receiving. How the extended parcel post is working as a business undertaking may be judged from scores of reports in the American press: of, for instance, a warehouse at Wells, Nevada, "where 80 tons of grain are held for shipment, sack by sack, through the parcel post;" of "a fast mail train delayed by the loading of two tons of wheat as parcel post;" or of "a car load of potatoes from Deeth to Halleck." From the moral point of view it is sufficiently criticised in the published words of ex-President Taft: "When we establish a parcel post—a good measure in itself—and make the railroads carry all the business we can get without adequate compensation, we are stealing from the railroads. That is what we are doing."

But this is not all the story. When the report of the joint committee above mentioned, based on two years' study of the question, was complete, and its tenor became known, but before it had been officially presented, the chairman of the House of representatives' committee on post offices, at the instance of the postmaster general, suddenly introduced a bill, the effect of which was further to reduce the payment which the joint committee had found to be inadequate, and to make the postmaster general absolute judge, without appeal, of his own cause. The bill was forced through the House of representatives, the railroads being refused even a hearing, and sent up to the Senate. The Senate refused to pass it, whereupon a second attempt was made to jam it through in the rush of business before the adjournment by "tacking" it on to an appropriation bill. Thereupon the Senate threw out the appropriation bill of the postmaster general, who, be it observed, is a cabinet minister, has since publicly accused the railroads of attempting to "loot the post office revenues." I have told these stories (which are not derived from Professor Ripley's pages) at some length because it would seem that English readers, in forming an opinion as to the desirability of more or less regulation, should have regard to the public record, not only of the regulatees, but of the regulators.

Another point may be noted in this connection. The railroads in the United States are regulated by 48 separate states and the federal government—"50 stripes save one," as a railroad president puts it—and in each of the 49 the authority to regulate is shared between the legislative, executive and judicial branches of the government—branches whose respective functions are strictly delimited by written constitutions. Professor Ripley recognizes the existence of a hopeless welter of confusion. He speaks of "the well-nigh intolerable conflict of authority of the many public services, commissions and state courts now at work. . . . No fewer than six different state commissions are said to be taking a hand in the reorganization of the Wabash. The approval of each is necessary for validation of the plans. And it is impossible to obey so many masters. It is daily becoming more clear that the conflict of state and federal authority can only be averted . . . by the assumption of unified control by the United States. Rates, service, and finance are so completely interlocked that satisfactory regulation in each field cannot be exercised except by the assumption of full authority over all three domains alike." That exclusive federal authority will be established in the near future is most unlikely. For, as has been shrewdly pointed out, any member of Congress who voted to deprive his state of control of its railways would sign his own political death warrant. And such documents politicians do not sign with alacrity. But Professor Ripley is so whole-hearted an advocate of public regulation that even the "well-nigh intolerable conflict of authority" does not deter him from desiring to increase both in scope and minuteness the present mass of public regulation.

Perhaps the most useful contribution to the railway question in the United States at the present moment would be an equally well-informed, intelligent, and honest history and criticism of the faults, both of dishonesty and stupidity, of the public authorities of the United States in dealing with their railways. Let us hope that Professor Ripley will find time to write it.

General News Department

The eastbound through passenger train of the National Transcontinental was derailed, on December 16, near Armstrong, the first important derailment on the new line. The damage to cars is said to have been considerable, but there were no serious injuries to persons.

W. F. M. Goss, chief engineer of the Chicago Association of Commerce Committee on Smoke Abatement and the Electrification of the Railway Terminals of Chicago, spoke before the Western Society of Engineers, Chicago, on Monday evening, December 20, on the work of the commission and its report.

The Texas & Pacific has reached an agreement with the Order of Railway Telegraphers, providing for an increase in wages which will cost the road about $14,000 a year. The compromise agreement provides for a minimum wage of $70 a month and some changes in working conditions. The operators had asked for a 20 per cent increase in all parts of the system.

The Minnesota Railroad and Warehouse Commission has filed with the Interstate Commerce Commission a brief in reply to the brief presented by the Presidents' Conference Committee on September 1, 1915, and discussed orally before the commission on September 30. This brief presents the views of the Minnesota commission on the points discussed by the railroads.

The Baltimore & Ohio is now engaged in the elevation of its tracks and the elimination of the grade crossing at Liberty avenue, Pittsburgh. The tracks are being elevated for a distance of about a mile, being carried on a fill between concrete retaining walls for about two-thirds of the distance and on a steel viaduct for 200 ft. The improvement is estimated to cost $750,000 and will be completed late in 1916.

At a meeting of the board of managers of the Chicago Great Western Station Agents' Association held on December 11, the following officers were elected for the ensuing year: President, G. H. Hunt, freight claim agent; vice-president, J. F. Coykendall, secretary and treasurer; secretary, W. J. Cunningham, auditor of freight receipts. It was decided to hold the annual meeting of the association at Des Moines, Iowa, on January 25, 1916.

As announced in a recent issue a sub-committee of the Committee on Relations Between Railroads of the American Railway Association conferred with the Interstate Commerce Commission on December 9 regarding a plan for changes in the demurrage rules. The next step is to discuss the plan with representatives of the National Industrial Traffic League, as is customary in connection with matters pertaining to the general demurrage rules. The commission offered no encouragement to a plan for filing tariffs on short notice.

The Chesapeake & Ohio Employees' Magazine for some time has made a practice of publishing each month a special merit roll, calling attention to examples of especially meritorious service on the part of employees in preventing accidents. Since the establishment of this department about a year ago 376 employees have received favorable mention in this way, ranging from 14 in one division to 91 in another division. One of the division superintendents of the company writes to the magazine that the system of commending employees in this way has been very successful, as far as his division is concerned, and that "it makes all the employees more observing and careful to see that nothing that is liable to cause an accident gets by their observation."

The arbitrators who rendered a decision early in the year on the demands of the western enginemen and firemen, have been called together for a meeting in Chicago on January 4, to pass on 70 questions which have been submitted by the railroads and by the labor organizations regarding differences of opinion as to the interpretations of certain provisions of the award. The board has already been reconvened once (August 30), and at its meeting at that time issued rulings on 194 questions of disagreement that had been submitted. Four members of the board, including the two railroad representatives and the two brotherhood representatives, held a meeting two or three weeks ago in the effort to reach an agreement on the 70 additional questions. As they were only able to agree on a portion of them, it was found necessary to call a meeting of the entire board.

More Relief for the Railroads

"Clifford Thorne, leader in the fight against increases in rates, yesterday declined to make any statement whatever in regard to the commission's finding."—*From the Des Moines Register and Leader.*

The Complaint Box—Turned Around

The Southern Railway prints on the bills of fare in its dining car the following:

"The management expects its employees to distinguish their service to the public by courtesy, and requests the traveling public to report examples of successful service so that the employees may be encouraged by appreciation of their efforts."

Railway Business Association Dinner

It is announced that the annual meeting of the Railway Business Association will be held at the Waldorf-Astoria Hotel, New York, on January 27, 1916. The sessions will be as follows: A business meeting at 11 a. m.; election of officers, 1:30 p. m., and dinner at 7 p. m. promptly. The speaking program will be announced later.

Research Fellowships in Engineering at the University of Illinois

The University of Illinois has maintained 10 research fellowships of $500 each for graduate work in the Engineering Experiment Station since 1907. Last spring four additional research fellowships were created, making 14 in all. There will be five vacancies in these fellowships at the close of the current academic year and nominations for the places will be made from applications received by the director before February 1. Appointments are open to graduates of approved American and foreign universities and technical schools. If accepted, the student must remain two consecutive college years.

American Electric Railway Association

The seventh annual mid-year meeting of the American Electric Railway Association will be held at the Congress Hotel and Annex, in Chicago, on February 4, 1916. The joint dinner with the American Electric Railway Manufacturers' Association will be held on the evening of the same day. Although the program for the two events has not as yet been definitely decided upon, it is probable that the meeting will be given over to the discussion of two subjects—Valuation and Rate of Return. The committee on subjects is making arrangements for the presentation of papers by three men of national prominence. An unusually large attendance at both meeting and dinner is anticipated.

Association of American Portland Cement Manufacturers

At the annual meeting of the Association of American Portland Cement Manufacturers held in New York on December 15, the following officers were elected for the coming year: President, B. F. Affleck, president, Universal Portland Cement Company; first vice-president, F. W. Kelley, president of the Halderberg Cement Company; assistant secretary, L. R. Ferguson, connected with the association for some time as assistant secretary; treasurer, G. S. Brown, president of the Alpha Portland Cement Company, and assistant treasurer, John J. Matthes, treasurer of the Alpha Portland Cement Company. J. P. Beck was elected general manager of the association.

Plans for Eight-Hour Day Campaign

The executive committees representing the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen

and Enginemen, the Brotherhood of Railway Trainmen and the Order of Railway Conductors at a meeting in Chicago on December 15, 16, 17, 18, 19 and 20, formulated demands to be presented to all the railroads in the country, providing for an eight-hour day or 12½ miles an hour speed basis in freight and yard service and time and one-half for overtime, with no change in the present schedules as to passenger service. The form of the proposed changes in the present agreements with the railroads expiring about April 30, 1916, are to be submitted to a referendum vote of the membership of the organizations.

The New Haven Trial

The government attorneys in the trial of the former New Haven directors in the Federal District Court in New York rested their case Friday last after having spent 43 days and calling 27 witnesses. The documents identified numbered 1,981, and most of these were introduced as evidence. The testimony fills 6,500 pages, this meaning possibly one and one-half million words. Beginning Monday the attorneys for the defense presented their side of the case.

Pan-American Scientific Congress

The program of the transportation, commerce, finance and taxation section of the second Pan-American Scientific Congress, to be held at Washington, D. C., from December 27 to January 8, as announced, includes the following papers on railroad subjects: "The Relation of Central to Local Control in the Regulation of Public Utilities," by C. A. Prouty, director, division of valuation, Interstate Commerce Commission; "Problems of Government Regulation of Railway Rates," by Prof. Emory R. Johnson, University of Pennsylvania, Philadelphia, Pa.; "The Safety First Movement on American Railways," by R. C. Richards, general claim agent, Chicago & North Western, and "Lines of Future Railway Development," by Fred Lavis, consulting engineer, New York City.

James S. Harlan, of the Interstate Commerce Commission, is chairman of the sub-committee on transportation for the congress, and the other members are B. H. Meyer, of the Interstate Commerce Commission, and Prof. E. R. Johnson, of the University of Pennsylvania.

Chicago Strike Settled

A strike of the enginemen, trainmen and switchmen employed on the Belt Railway of Chicago, which was mentioned in last week's issue, was called on the morning of December 14, and was settled late in the evening on December 16, by a compromise agreement effected by G. W. W. Hanger, assistant United States commissioner of mediation and conciliation. Under this agreement the railway will run special service trains in the morning and evening to carry the employees to their work at the Clearing yard until January 1, 1917, by which time the men are expected to make arrangements to move their homes to the vicinity of the new Clearing yard.

A large number of the employees of the Belt live in the vicinity of the yards at Eighty-third street. When the new Clearing yard was opened last May, rather than move to the new location about six miles west, the employees demanded that the company run hourly trains to transport them to and from their work. The company objected to running passenger trains over the Belt Railway, which is used only for freight service, but agreed to run a train for the accommodation of the employees up to June 1, 1916, to give them time to adjust themselves to the new circumstances. The employees' organizations insisted on the train service up to October 1, 1916, and longer if there should still be a lack of "proper housing conditions" near the new yard. When the company refused to agree to this the strike was called by officers of the Brotherhood of Locomotive Engineers, Brotherhood of Locomotive Firemen and Enginemen, and the Brotherhood of Railway Trainmen. At the company's request Mr. Hanger went to Chicago and spent two days in conference with the officers of the brotherhoods and of the railroads in the effort to bring about a settlement. Meanwhile the company made no effort to operate its freight trains, which interfered rather seriously with the interchange of traffic between the railroads and resulted in a large accumulation of loaded cars at the Clearing yard.

The terms of settlement provide that four service trains shall be run each way between Seventy-fifth and Halsted streets and the Clearing yard between 5 and 9 a. m., and between 5 and 8 p. m.

Forestalling Anxiety About Delays

(Circular of the Long Island Railroad Company, J. B. Austin, Jr., Superintendent)

In event of any delay to trains or interruption of traffic which may be important enough to affect the comfort and convenience of passengers, conductors will make every possible effort to find out the cause of the delay and its probable extent and will furthermore see that a suitable announcement is made to the passengers and others interested.

Conductors and trainmen are instructed to freely and courteously answer all questions addressed to them upon this subject and give any and all information which may be necessary for passengers to make suitable arrangements. It may not always be possible for conductors and trainmen to find out exactly the cause of the trouble or the extent of the delay. In such instances they will only be expected to do the best they can.

The chief train despatcher at Jamaica will get in touch with the situation and will aid the efforts of conductors by giving them proper information, which in turn should be given to passengers. Station agents will endeavor to find out why trains are late and see that the passengers waiting at the stations are properly advised. The train despatchers will keep in touch with the agents and assist them in ascertaining cause and extent of trouble.

This company feels that its patrons should be informed of any interruption of traffic or extraordinary delays to trains upon which they may be traveling or about to travel. In many instances information of this character is of great value to our patrons and frequently will enable them to change their arrangements and lessen the inconvenience to which they would otherwise be subjected. Nothing will produce so good an effect and contribute as much to the popularity of the Long Island Railroad as the announcement of information of this character.

Swedish State Railroads Advance Rates

Advances not only in passenger and freight rates, but in sleeping car and baggage charges as well, have been made by the government railways of Sweden to offset higher operating costs due to the war, according to the Bureau of Railway News and Statistics. Sweden follows the example of the state railways of Italy, Switzerland, Norway and Russia. Government railways elsewhere in the world also have made heavy increases in fares and rates since the war. In some instances these advances follow increases already made within the last few years to offset the abnormal rise in wages and cost of material which has been felt generally throughout the world. The Bureau says in its bulletin:

"For third class sleeping car accommodations the Swedish charge has been raised from 67 to 80.4 cents per night, or 20 per cent. First class sleeping car rates remain at $2.87 per night (which it will be noted is about 43 per cent higher than the standard rates prevailing in the United States), while second class remains at $1.43 per night (likewise 43 per cent above the $1 rate of our tourist sleepers).

"All privileges of carrying baggage free, whatever the weight, have been withdrawn. Heretofore Swedish railways, like others in Europe, have allowed a free weight of 25 kilograms, or 55 pounds, about one-third the free allowance on American railways. A charge of 5.36 cents, regardless of weight, will be made hereafter, which, it is stated, will fall hardest upon the poorer third-class travellers and therefore has been opposed strongly by the Swedish press.

"Passenger fares have been advanced by fixed amounts instead of sums increasing with the distance, so that the ratio of increase falls heaviest upon the cheaper short journeys. Expressed in American cents, the advances are:

	1st Class.	2nd Class.	3rd Class.
1 to 30 miles	5.36	2.68	1.34
Over 30 miles	13.40	8.04	5.36

"Monthly tickets are increased 40 cents second class and 13.4 cents third, while party tickets for 20 rides are raised 21.4 cents second class and 8 cents third.

"On fast freight the rates are advanced 1.07 cents for every 22 pounds L. C. L. and 8.04 cents for every 220 pounds carload. Ordinary freight L. C. L. is advanced by from 5.36 cents to 3.22

cents for every 220 pounds. On carloads the advance measures from 3.22 to 1.07 cents for every 220 pounds."

Traveling Third Class in Russia

An entertaining description of how the average Russian travels is contained in a new book which has recently been published. The author (Julius West, in "Soldiers of the Tsar and Other Sketches") preferred to mix with the man in the street rather than confine himself to interviewing notabilities. It appears that on long-distance journeys the third-class cars are apt to be crowded, even if they do not contain their full complement of passengers, since, "besides the normal impedimenta, the Russian takes food enough with him to tide him over the most interminable delays, and, if the journey is to be a long one, he will always have a pillow and blankets tied up in a manner which suggests a suffocated baby." Lovers of fresh air will hardly like such long journeys in winter, since air is excluded from the coaches by double glass windows, screwed down to prevent their being opened, and by threefold doors. The third-class sleeping accommodation is of the most primitive nature, being furnished by wooden shelves placed one above the other. As the various compartments communicate with each other, the atmosphere after a journey of some two days and nights, which is by no means a long one in Russia, can more easily be imagined than described. Compensation of a kind exists, however, in the shape of the buffet, where tea may be had, "in a compartment decorated at the expense of the Government with a sixpenny ikon (sacred picture) and a bunch of artificial flowers." Moreover, third-class travel is cheap. The journey from Moscow to Warsaw, a distance of 807 miles, only costs about $4.75.

Signal Companies Investigated

A committee of the New York legislature investigating the conduct of Robert C. Wood, a member of the Public Service Commission of the state for the First district (New York City), had before it last week Sidney G. Johnson, Col. Henry G. Prout, A. H. Renshaw, W. C. Banks and some of the directors of the Union Switch & Signal Company, and in the course of its examination of these and other witnesses brought out a few facts of general interest.

It was charged that Commissioner Wood, in 1914, had asked Johnson for money in consideration of his vote in the commission in favor of granting to the Union Switch & Signal Company, of which Johnson was vice-president, the contract for installing block and interlocking signals in the Center street subway (which contract finally was awarded to the Federal Signal Company, and Johnson, corroborating this, named the sum as $5,000. Johnson reported to Prout, president of the company, and he laid the matter before the directors. W. D. Uptegraff, now president of the company, then holding a lower position, testified that Prout's proposition was in substance a request for $5,000 to be used as a bribe, and that a majority of the directors at once voted to ask both Prout and Johnson to resign. They did resign at once. Johnson soon became vice-president of the General Railway Signal Company and Prout subsequently became president of the Hall Switch & Signal Company. Colonel Prout told the investigators that the demand for his resignation was based, in fact, not on his alleged desire to bribe a public officer, but to dissatisfaction because he pursued too conservative a course in the management of the company.

Commissioner Wood, some weeks before he took office as commissioner, had received $1,500 from the Union Switch & Signal Company for arranging a $70,000 contract with the Kansas City, Clay County & St. Joseph Railroad. Johnson testified that Wood, after receiving this money, at once paid back to him (Johnson) $500 of it and that it was by him turned into the treasury of the Union company.

A. H. Renshaw, president of the Federal Signal Company, testified that John T. Cade, vice-president of that company, had received from W. C. Banks, of the North Western Equipment Company, New York City, an offer, for a consideration, to influence Wood's vote in favor of giving a certain contract to the Federal company, Banks being well acquainted with Wood. Renshaw at once told this to E. E. McCall, chairman of the Public Service Commission, who advised Renshaw to lay the facts before the governor of the state.

The investigation is still going on, and most or all of those who have given useful testimony have been called before the grand jury.

Valuation Circulars

Thomas W. Hulme, general secretary of the Presidents' Conference Committee for the Federal Valuation of Railways, has issued a circular to the chairmen of valuation committees on the individual railroads calling attention to the manner of determining depreciation. The valuation act directs that depreciation be considered. A difference of opinion exists between the carriers and the government as to what constitutes this depreciation. In certain instances the government has used the "straight line" method and life tables in determining what it terms the "condition per cent" of the property. On the other hand, Director Prouty stated recently that it was his view that the useful service life of composite property like locomotives, cars, etc., was not ascertainable and that no attempt would be made to fix the same, but that the remaining service life of the elements of such properties would be ascertained and that an effort would be made to agree with the carriers upon this. The position of the carriers on this subject was set forth in the brief filed with the Interstate Commerce Commission on September 1, in which they maintained that there was no depreciation in the composite property when the deterioration in its physical parts is taken care of by proper replacements as due. The use of the "straight line" method and of life tables was condemned.

The government and the carriers agree that any depreciation existing must be deducted, but they disagree as to what constitutes depreciation. At a recent meeting of the engineering and equipment committees of the roads the following instructions to pilots relating to "condition per cent" were agreed upon:

(a) Instruct pilots to endeavor to agree when requested in regard to facts such as "age," probable date of renewal of parts of each individual unit as result of inspection of each unit or its parts and the estimated cost of same; "general description of the physical conditions of the whole or parts."

(b) Instruct pilots not to agree to life tables, to the life of the whole unit of property, nor to condition per cent.

(c) Instruct pilots to furnish all information possible in regard to facts, from the records or other reliable information, in regard to operating conditions and the standards of maintenance and to co-operate as far as possible with representatives of the Division of Valuation.

(d) Pilot should make a daily report accompanied by his notes.

These instructions apply to equipment, buildings, tie and rail systems in tracks, bridges and all other railway structures.

It is the duty of the carriers to co-operate with the government in the ascertainment of facts in so far as they are invited or permitted to do so. The railway pilots, however, should not, either by the acceptance of copies of the notes or by their signature thereon, enter into any agreement as to the use of the results of life tables or other methods whereby a condition per cent of the composite property may be fixed.

The President's Conference Committee has also issued a circular calling the attention of the carriers to the importance of including in their inventories all property owned *or used* by them in accordance with the valuation act. The committee suggests that the carriers prepare special lists showing property which is not owned but which is used "for its purposes as a common carrier," including industrial side tracks, warehouses, docks, elevators and other property forming part of the terminal facilities, equipment of private car lines, etc. Also, all property owned and used jointly with other carriers or owned by non-carriers but used by the common carriers should be included in the inventory with a full statement of the condition. The committee suggests that if the federal field forces do not include this information, appropriate exception be taken by the carriers' representatives.

NO BOOKING OF RAILWAY SEATS IN ENGLAND.—The executive committee now in charge of the English railways has decided not to book seats on any of the railway systems, with the exception of whole compartments and sleeping berths. The booking of seats necessitates a large amount of telephonic and postal correspondence, and by dispensing with the bookings the staff which deals with this department will be released for more important war service.

REVENUES AND EXPENSES OF RAILWAYS

Name of Road.	Average mileage operated during period.	Operating revenues			Operating expenses							Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	Miscellaneous.	General.	Total.				
FOR THE MONTH OF SEPTEMBER, 1915															
Delaware & Hudson Co.—R. R. Dept.	886	$1,624,948	$331,163	$2,072,983	$154,143	$296,096	$24,938	$622,664	$27,765	$66,135	$1,189,687	$883,295	$56,500	$826,795	$45,978
Denver & Salt Lake	255	147,048	32,221	187,299	18,830	28,296	2,322	56,191	.....	4,231	109,870	77,428	8,000	69,428	12,729
MONTH OF OCTOBER, 1915															
Alabama & Vicksburg	143	$100,225	$36,188	$147,949	$18,214	$29,988	$3,944	$48,115	$2,224	$6,041	$108,525	$39,424	$10,350	$29,074	$16,991
Ann Arbor	301	174,302	42,522	231,226	25,928	31,959	4,662	73,890	467	10,036	146,942	84,284	12,800	71,442	14,076
Atlantic City	170	79,727	59,581	150,027	59,638	16,261	1,999	82,252	96	1,327	161,573	—11,546	10,000	—21,543	25,699
Baltimore & Ohio Chicago Terminal	79	.....	530	164,445	19,812	20,423	789	65,041	1,472	4,428	109,401	55,044	17,654	37,388	6,117
Bingham & Garfield	27	162,293	3,022	166,144	14,098	17,734	919	23,708	69	2,052	58,581	107,563	5,275	102,288	62,029
Buffalo & Susquehanna R. R. Corporation	253	132,208	5,862	140,007	22,557	38,171	1,030	37,127	.....	5,794	104,680	35,327	2,600	32,727	9,072
Chicago & North Western	8,108	5,857,056	1,770,914	8,457,318	1,014,921	1,306,903	109,272	2,793,106	50,655	157,209	5,402,201	3,055,117	385,000	2,669,841	567,561
Chicago Great Western	1,427	928,071	272,479	1,312,240	189,479	216,836	44,263	453,255	8,390	31,884	943,082	369,158	45,442	323,602	38,673
Chicago, Peoria & St. Louis	255	127,854	23,179	160,332	21,839	31,405	5,602	61,641	.....	5,618	126,105	34,227	4,800	29,427	14,421
Chicago, Rock Island & Pacific	7,663	4,333,065	1,528,481	6,330,758	1,017,540	1,103,939	142,863	2,278,168	54,270	143,397	4,736,499	1,594,259	296,686	1,297,235	—130,623
Colorado Midland	338	120,815	14,781	146,637	23,937	34,578	6,758	61,119	897	6,329	133,619	13,019	10,000	3,019	—38,776
Delaware & Hudson Co.—R. R. Dept.	886	1,892,714	252,732	2,275,557	188,399	321,164	26,358	675,823	18,900	67,304	1,296,750	978,807	56,500	920,117	220,405
Denver & Salt Lake	255	166,370	22,829	195,526	20,416	35,460	1,519	66,109	.....	3,804	127,308	68,219	8,024	60,041	18,142
Detroit & Mackinac	393	68,177	25,864	101,100	10,964	15,575	1,796	31,737	.....	2,745	62,817	38,283	6,555	31,728	8,272
Indiana Harbor Belt	110	.....	.....	356,034	40,091	27,862	2,718	129,545	.....	7,521	207,738	148,297	7,600	139,729	27,325
Kansas City, Mexico & Orient	737	191,545	38,293	241,922	54,544	45,398	8,470	89,393	.....	10,678	208,483	33,439	14,274	19,149	—41,514
Louisville, Henderson & St. Louis	200	92,284	35,125	134,899	25,740	17,959	4,835	40,855	.....	3,304	92,692	42,207	3,800	38,394	9,028
Midland Valley	380	119,085	35,413	162,694	25,276	20,226	2,429	48,449	.....	6,053	102,433	60,261	5,359	54,894	13,623
New Orleans & North Eastern	Freight 196 / Passenger 204	261,123	53,680	370,851	40,831	57,406	10,531	108,428	5,543	11,139	233,878	136,973	15,100	121,873	72,568
New Orleans Great Northern	285	102,745	28,272	144,044	18,829	24,954	2,912	41,379	189	6,251	94,513	49,531	4,089	45,395	1,534
New Orleans, Texas & Mexico	286	115,384	25,459	147,692	24,851	22,817	4,007	46,997	.....	10,069	108,741	38,951	1,501	37,331	28,837
Norfolk Southern	908	277,399	89,183	392,294	50,672	53,928	7,002	128,343	78	19,510	259,533	132,760	12,253	120,455	41,196
Oahu Railway & Land Co.	114	52,498	21,302	79,526	8,174	8,434	684	21,341	.....	3,958	42,590	36,936	7,250	29,686	6,191
Pa. & Reading	21	145,885	.....	172,047	9,052	13,679	38	48,310	.....	153	71,233	100,814	10,000	90,814	43,911
Philadelphia & Reading	1,120	4,352,362	591,010	5,169,046	382,919	737,217	54,093	1,569,121	12,794	86,333	2,840,062	2,328,985	100,477	2,227,928	836,878
Southern Pacific Co.	6,928	6,765,855	2,954,959	10,652,827	1,022,473	1,433,679	190,194	3,066,292	190,581	220,037	6,107,834	4,544,993	407,731	4,135,100	636,807
THREE MONTHS OF FISCAL YEAR ENDING JUNE 30, 1916															
Delaware & Hudson Co.—R. R. Dept.	886	$4,910,967	$969,368	$6,248,435	$480,838	$911,461	$85,936	$1,913,849	$67,845	$192,997	$3,649,259	$2,599,176	$169,500	$2,429,676	$121,614
Denver & Salt Lake	255	376,979	132,491	535,318	60,932	78,673	7,910	156,791	.....	15,605	319,802	215,516	24,042	191,474	24,134
Ulster & Delaware	129	134,172	165,822	352,547	41,520	33,613	5,670	130,048	157	8,359	219,367	133,180	10,500	122,666	20,485
Union R. R. of Baltimore	9	317,637	66,654	389,241	48,755	.....	.....	13,398	.....	6,604	68,757	320,484	17,417	303,068	—44,552
Union R. R. of Pennsylvania	31	.....	.....	1,549,996	113,100	274,932	314	473,413	.....	9,062	870,821	679,175	22,001	657,174	356,646
Vicksburg, Shreveport & Pacific	171	224,750	109,576	371,834	65,512	76,754	10,070	122,376	6,462	13,974	295,148	76,686	24,300	52,386	12,364
Virginia & Southwestern	240	416,649	44,831	475,284	73,147	106,085	6,354	125,964	.....	12,217	323,767	151,517	19,735	131,782	—16,081
Washington Southern	36	126,730	127,287	331,896	41,830	38,520	4,111	104,666	3,622	9,270	207,018	124,878	10,620	114,250	43,760
Western Ry. of Alabama	133	165,287	104,696	302,357	52,021	69,785	16,438	85,977	5,910	13,439	243,568	58,789	16,395	41,296	10,535
FOUR MONTHS OF FISCAL YEAR ENDING JUNE 30, 1916															
Alabama & Vicksburg	143	$341,306	$141,639	$528,095	$69,192	$119,471	$14,759	$181,085	$8,652	$22,348	$415,508	$112,588	$33,886	$78,701	$32,761
Ann Arbor	296	553,080	211,226	821,451	99,090	129,423	19,611	286,717	2,327	34,801	571,970	249,481	51,200	198,100	—26,254
Atlantic City	170	314,052	793,064	1,152,592	145,068	85,775	13,703	491,444	378	8,361	744,724	407,868	40,000	367,789	32,525
Baltimore & Ohio Chicago Terminal	79	.....	2,882	569,520	76,241	68,529	3,430	228,658	7,839	20,631	392,626	176,895	70,614	104,912	7,164
Bingham & Garfield	27	658,373	12,171	672,952	67,598	57,089	3,909	84,379	461	7,792	221,227	451,725	17,176	434,549	205,925
Buffalo & Susquehanna R. R. Corporation	253	484,419	27,719	519,950	91,447	137,165	4,248	136,521	.....	22,503	391,885	128,065	10,400	117,665	45,896
Chicago & North Western	8,108	19,965,488	7,944,274	31,175,215	4,525,215	4,990,790	454,384	10,234,745	218,690	608,754	20,934,154	10,241,061	1,540,000	8,693,841	283,199
Chicago Great Western	1,427	3,300,654	1,191,858	4,926,235	755,606	855,590	182,234	1,650,448	33,698	131,401	3,603,941	1,322,294	184,184	1,136,458	—84,388
Chicago, Peoria & St. Louis	255	450,843	107,604	592,939	99,469	113,336	22,486	227,462	.....	21,948	484,702	108,238	18,498	89,740	—9,330
Chicago, Rock Island & Pacific	7,659	15,520,170	6,859,416	24,230,932	4,031,091	4,410,287	581,210	8,794,001	210,090	584,391	18,602,724	5,628,208	1,130,984	4,495,534	—1,163,737
Colorado Midland	338	432,346	97,728	571,471	108,732	128,876	29,597	235,502	6,247	22,723	531,677	39,794	40,000	—206	—81,781
Delaware & Hudson Co.—R. R. Dept.	886	6,803,681	1,222,100	8,523,992	669,236	1,232,625	112,294	2,589,671	86,745	260,300	4,946,009	3,577,983	226,000	3,349,793	342,019
Denver & Salt Lake	255	543,349	155,319	730,844	81,348	114,133	9,429	222,900	.....	19,409	447,109	283,735	32,066	251,515	42,276
Detroit & Mackinac	393	229,450	116,229	374,907	44,888	64,425	8,388	128,699	892	10,771	258,063	116,844	28,121	88,723	—6,010
Indiana Harbor Belt	110	.....	.....	1,179,647	147,413	105,726	11,218	432,670	.....	30,515	727,542	452,105	30,249	420,804	58,573
Kansas City, Mexico & Orient	737	655,550	145,892	846,499	226,767	183,498	34,649	353,313	.....	40,192	838,419	8,080	44,385	—36,319	207,400
Louisville, Henderson & St. Louis	200	327,338	152,962	508,200	130,876	69,846	20,531	150,433	.....	12,251	383,936	124,263	15,200	108,999	—19,054
Midland Valley	380	412,807	129,787	573,411	103,019	70,035	9,136	172,429	.....	23,306	377,925	195,486	21,437	173,737	95,468
New Orelans & North Eastern	Freight 196 / Passenger 204	902,765	192,826	1,229,344	136,555	225,190	40,652	373,982	22,524	45,288	844,191	385,153	60,251	324,902	106,485
New Orleans Great Northern	285	418,610	107,283	576,775	71,972	96,137	11,352	165,484	714	24,281	369,940	206,835	15,796	190,950	—4,820
New Orleans, Texas & Mexico	286	405,336	95,198	532,234	79,532	86,428	15,443	173,414	.....	38,835	393,652	138,582	6,006	132,406	45,794
Norfolk Southern	908	931,464	389,029	1,421,030	188,742	201,559	30,656	485,881	527	70,752	978,117	442,913	49,105	393,755	106,205
Oahu Railway & Land Co.	114	418,358	85,652	535,518	38,630	35,786	2,707	101,442	.....	15,177	193,743	341,775	29,000	312,775	33,648
Pa. & Reading	21	457,160	.....	562,469	42,068	53,343	154	169,075	.....	732	265,367	297,102	40,000	257,102	88,351
Philadelphia & Reading	1,120	14,600,857	2,324,105	17,769,510	1,480,743	3,026,476	189,127	5,700,221	47,162	290,719	10,727,028	7,042,481	402,299	6,638,348	1,488,142
Southern Pacific Company	6,930	23,747,811	13,928,248	41,639,928	4,116,727	5,446,999	786,025	11,954,593	837,781	883,267	23,971,708	17,668,219	1,646,462	16,015,416	3,455,204

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, date of next or regular meetings, and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, 455 Grand Central Station, Chicago. Next meeting, January, 1916, Atlanta, Ga.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, Supt. Timber Preservation, B. & O., Mt. Royal Sta., Baltimore, Md. Next convention, January 18-20, 1916, Chicago.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meeting, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—E. N. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.

RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.

RAILROAD MEN'S IMPROVEMENT SOCIETY.—J. B. Curran, Erie R. R., 50 Church St., New York. Meetings, alternate Thursdays, October to May, Assembly Rooms of Trunk Line Association, 143 Liberty St., New York.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York. Annual meeting, January 27, 1916, Waldorf-Astoria Hotel, New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.

RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.

SALT LAKE TRANSPORTATION CLUB.—R. E. Rowland, David Keith Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Piedmont Hotel, Atlanta.

TOLEDO TRANSPORTATION CLUB.—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.

TRAFFIC CLUB OF NEWARK.—Roy S. Bushy, Firemen's Bldg., Newark, N. J. Regular meetings, 1st Monday in month, except July and August, The Washington, 559 Broad St., Newark.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Gen'l Agt., Erie R. R., 1924 Oliver Bldg., Pittsburgh, Pa. Meetings, bi-monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library Bldg., St. Louis, Mo. Annual meeting in November. Noonday meetings, October to May.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Superintendent's office, N. Y. C. R. R., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.

UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.

WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Building, Chicago. Regular meetings, 3d Tuesday in month, except June, July and August, Karpen Bldg., Chicago.

WESTERN SOCIETY OF ENGINEERS.—E. N. Layfield, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meeting, 1st Wednesday after 1st Thursday in January, Chicago.

Traffic News

The Western Maryland has finished its new grain elevator at Baltimore and the structure is now in use. Its capacity is 1,000,000 bushels.

Shipments of anthracite coal during the month of November amounted to 6,297,215 tons as compared with 5,928,286 in November of the preceding year.

The railroads running east of Chicago have issued embargoes against export freight except perishable freight destined to the Atlantic seaboard ports, on account of the embargoes issued by the eastern roads because of the congestion at the ports.

The Twentieth Century Limited train of the New York Central Lines during the 12 months ending October 31, 1915, covered the total distance of 700,800 miles in both directions between New York and Chicago in 876,549 minutes. As the schedule called for 873,600 minutes, this is a record of 99.66 per cent on time.

The Panama Canal was cleared of obstructions sufficiently on Monday of this week to allow the passage of some small vessels, drawing not more than 20 ft. of water, which had been waiting for several months; but it was immediately thereafter ordered closed and it was announced that it would not be permanently reopened until there was no longer any danger of interruption by landslides.

Traffic officers of the Missouri railroads at a meeting in St. Louis last week decided tentatively to ask a rehearing of the case before the Missouri Public Service Commission in which the commission allowed increases in single ticket passenger fares on condition that the railroads issue 500-mile books good for bearer. A meeting was to be held this week to decide what action to take with reference to the increases in freight rates.

The Anti-Saloon League of New York has sent to the presidents of the railroads of that state a letter suggesting that the sale of liquor be abolished on all trains; the fact being pointed out that since the last election the number of towns in New York which have voted to prohibit the sale of alcoholic liquor in every form is 485. A considerable number of towns, in addition to this, have voted to permit its sale only by druggists.

The majority of the railway companies in Argentina on October 1 put into effect a 10 per cent increase in their freight and passenger rates after conferences with the officers of the national government, to offset increases in the prices of coal and railway materials, as well as increases in taxes. The increase does not apply to suburban first and second class tickets, second class long distance tickets, stone and maize, or to demurrage or telegraph charges. The companies had the power to raise rates without intervention by the government, because they are still earning less than the percentage of profit which under the law would enable the government to intervene in the regulation of their rates.

The Baltimore & Ohio has appointed two traveling chaperons, Mrs. C. H. White and Mrs. Samuel Watkins, who will have charge of special parties of students and other young women traveling. On account of the frequent trips made by students at girls' schools during the holidays, at vacation time and on other occasions, requiring the services of experienced travelers, it is believed that the chaperones will be of valuable assistance in imparting information as to points of interest, arranging for tickets, hotel accommodations, baggage transfers and other details. Everything will be done through the co-operation and approval of school authorities or others interested in such tours. The chaperones are the wives of agents of the road and have had wide experience in such matters. Mrs. White is the wife of the agent at Rockville, Md., and Mrs. Watkins the wife of the agent at Sykesville, Md. They will accompany a party of students of National Park Seminary, a girls' school at Forest Glen, Md., on a special train from Washington to Chicago.

The Chamber of Commerce of Boston has presented an elaborate protest to the Interstate Commerce Commission against the advanced freight rates which have been filed by the railways

to take effect January 1, on shipments from New England, New York and other Eastern territory to the Southeastern states. The special complaint of Massachusetts is that by the new tariff the rates from Boston are to be higher than from New York, whereas hitherto the two cities, on all important commodities, have had exactly the same rates. By the new tariff the first-class freight rate from Boston is five cents higher than from New York; second and third classes are four cents higher, fourth and fifth classes three cents, and sixth is two cents. Arguments were presented at the hearings in Washington by protestants from Nashville, Atlanta, St. Louis and a dozen other Southern cities. On the higher classes the increase in many cases is about 10 per cent; and on numerous commodities it is larger than this. The hearings, begun last week, extended to Wednesday of this week.

The Traffic Club of New York

The regular monthly meeting of the Traffic Club of New York, to be held at the Waldorf-Astoria, on December 28, will be addressed by P. H. W. Ross, president of the Marine League of the United States. His subject will be: "What If Ninety Per Cent of Our *Land* Transportation Were Also Under the Control of Foreigners?"

Decrease in Immigration to the United States

Immigration to the United States during the fiscal year 1915 was less than it has been for 17 years, according to the report of the Bureau of Immigration of the United States Department of Labor, amounting to only 326,700 in 1915, as compared with 1,218,480 in 1914; 1,197,892 in 1913, and 838,172 in 1912. The last year for which the immigration was less than in 1915 was in 1899, when the total number of immigrant arrivals in the United States was 311,715. For the fiscal year 1914, 204,074 aliens departed from this country, as compared with 303,338 the year before.

For 10 months of 1915, including October, the total number of alien and citizen steerage arrivals at the port of New York was 83,606, as compared with 427,346 in 10 months of 1914, a decrease of 343,740, or 80.44 per cent. Of the total for 1915, 76,527 were aliens and 7,079 were citizens.

Freight Traffic to and from Mexico

Since the resumption of freight traffic to and from Mexico through Eagle Pass and Laredo large numbers of loaded freight cars have passed over the river every day. Corn, wheat, clothing and machinery have been shipped in large quantities from Northern and Western states. American commercial travelers are now numerous in Mexico, but it is said that, in a good many cases, especially shipments of grain for remote interior points, payment for the goods is demanded at the border.

This week it is reported that shipments through the Laredo gateway are again badly hampered by the action of the International & Great Northern in cancelling its agreement with the National Railways of Mexico to permit its own cars and those of connecting American lines to enter the southern republic. It is said that the International & Great Northern was willing to let the agreement stand, but that other lines objected to allowing their cars to enter Mexico unless the Mexican roads would give a bond of $1,000 for each car, insuring its safe return to this side of the border. This bonding feature is now in effect to a limited degree. Most shippers do not care to undergo the trouble and expense of guaranteeing the safety of a car and the old slow method of transferring freight from one car to another at the boundary is in effect. This embargo diverts much traffic destined to Mexico to the Eagle Pass gateway, where the Southern Pacific has a through-car working agreement with the National Railways of Mexico. The freight movement between the two countries is increasing rapidly. Considerable zinc ore is passing through Laredo and Eagle Pass on its way from Mexican mines to smelters in Oklahoma and Kansas.

RAILWAY IMPROVEMENTS IN INDIA.—About 20 miles outside the Bombay terminus of the Great Indian Peninsula Railway, the main line to Kalyan, is being re-aligned between Thana and Paksi stations. Included in the engineering work is a double track, broad gage tunnel 4,762 ft. long which has just been completed.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

Commissioner Hall and Examiner Thurtell, of the Interstate Commerce Commission, began a supplemental hearing in the Shreveport rate case at Houston, Tex., on December 17.

Coal from Illinois Points

Opinion by Commissioner Daniels:

Following the decision in the 1915 Western Rate Advance case (35 I. C. C., 497, 603-611) proposed increased rates on bituminous coal from Illinois mines to west bank Mississippi river crossings and other points are found justified (36 I. C. C., 549.)

Reparation Awarded

C. L. Gray Lumber Company v. Alabama, Tennessee & Northern et al. Opinion by Commissioner Clark:

The commission finds that a rate of 20½ cents a 100 lb. on lumber in carloads from Ward, Ala., to Memphis, Tenn., is unreasonable to the extent that it exceeds 14½ cents. (36 I. C. C., 376.)

Imported Nitrate of Soda

King Powder Company, et al. v. Pennsylvania Railroad et al. Opinion by the commission:

The commission refuses to permit increased import rates on nitrate of soda in carloads from Baltimore, Md., and Philadelphia, Pa., to Carrel street station, Cincinnati, and Kings Mills and Morrow, Ohio. (36 I. C. C., 653.)

Des Moines Commodity Rates

Greater Des Moines Committee v. Minneapolis & St. Louis et al. Opinion by Commissioner Harlan:

Proposed commodity rates to Des Moines, Iowa, from Chicago, based on the rates from Chicago to the Mississippi river, plus a mileage prorate of the rates from the Mississippi river to the Missouri river, found to be reasonable for the future. (36 I. C. C., 538.)

Classification of Empty Acetylene Gas Cylinders

Prest-O-Lite Company, Inc., v. Boston & Albany, et al. Opinion by Commissioner Harlan:

The official classification rate of third class on empty coppered or nickeled acetylene gas cylinders in less-than-carload quantities is found to be unreasonable and discriminatory, and a rating of fourth class is prescribed for the future. (36 I. C. C., 545.)

Rates on Glucose from Chicago

Opinion by Commissioner Daniels:

The commission finds that the carriers have justified proposed increases in the rates on glucose from Chicago to points in Pennsylvania and trunk line territory and for export through Atlantic ports. The present domestic rate to New York, for example, is 21 cents, the proposed rate is 25 cents. The export rate to New York is raised from 18.9 to 20 cents. (36 I. C. C., 379.)

Lettuce from Texas Points

Opinion by Commissioner Meyer:

The commission finds that the carriers have not justified items in a tariff of F. A. Leland, agent, which have the effect of increasing the arbitraries on lettuce in straight carloads, or in mixed carloads with other vegetables, from East St. Louis to various destinations in Central Freight Association territory, on traffic originating in Texas. As illustrative of the increased arbitraries, the arbitrary from East St. Louis to Cleveland would be increased from 24.7 cents to 28.2 cents; from East St. Louis to Cincinnati from 18.4 cents to 21.4 cents, and from East St. Louis to Pittsburgh from 27.8 cents to 31.5 cents. Most of this lettuce is des-

tined to more important markets in Central Freight Association territory, such as those named. (36 I. C. C., 511.)

Rates on Lumber from Points on the Oregon-Washington

Eastern Oregon Lumber Producers' Association v. Oregon-Washington Railroad & Navigation Company et al. Opinion by Commissioner Hall:

Combination rates on lumber and forest products taking the same rate from Oregon producing points on the line of Oregon-Washington Railroad & Navigation Company to points on the Chicago, Burlington & Quincy south and east of Hemingford, Neb., Guernsey and Cheyenne, Wyo., and Brush, Colo., to and including Missouri river points, are found unreasonable and discriminatory. Reasonable and non-discriminatory joint rates are prescribed for the future. (36 I. C. C., 526.)

Pig Iron from Virginia Furnaces

Opinion by Commissioner Daniels:

The tariffs in issue propose increased rates on pig iron in carloads from points on the Chesapeake & Ohio and the Norfolk & Western to certain points in Maryland, West Virginia, Pennsylvania, New York and by rail and water to Boston. The case is similar to *Low Moor Iron Co. v. C. & O.* (30 I. C. C., 615 and 36 I. C. C., 222), in which the commission prescribed maximum all rail rates on pig iron from Virginia furnaces to Baltimore, Philadelphia, New York and Boston. The commission finds that the carriers have not justified the increased rates to points in Pennsylvania, New York and Maryland and the increased rail and water rate to Boston. Increased rates to Pittsburgh rate points and to West Virginia points are found justified. (36 I. C. C., 552.)

Cottonseed Oil Refining in Transit

Swift & Co. v. Southern Railway. Opinion by Commissioner Clark:

It is held that the tariffs naming joint through rates on cottonseed oil did not, at times the shipments involved in this case moved, provide that shipments originating at points on the Central of Georgia and destined to points in northern states might be refined in transit at points on other lines, or in this case at Charlotte, N. C., and that, therefore, the aggregates of intermediate rates were legally applicable to shipments so treated. The commission finds, however, that the aggregates of the intermediate rates, as applied to through shipments, were unreasonable to the extent that they exceeded the joint through rates contemporaneously in effect and subsequently made applicable in connection with refining in transit at Charlotte, N. C. (36 I. C. C., 386.)

Complaints Dismissed

Elmore-Benjamin Coal Company et al. v. Chesapeake & Ohio et al. Opinion by Commissioner Harlan:

Through rates on coal in carloads from the Kanawha and New River, W. Va., fields on the lines of the Chesapeake & Ohio to Milwaukee, Wis., are not found unreasonable, and a request for joint rates is denied. (36 I. C. C., 528.)

Alexandria Paper Company v. Atchison, Topeka & Santa Fe, et al. Opinion by Commissioner Harlan:

Complaints against the carload rates on news print paper from Alexandria, Ind., to various points west of the Mississippi river are dismissed. (36 I. C. C., 532.)

Fall River Bleachery v. Atlantic Coast Line, et al. Opinion by the commission:

Rail-and-water rates on cotton piece goods from Carolina territory to Fall River, Mass., are not found unreasonable or discriminatory. (36 I. C. C., 535.)

Lehigh Valley Lake Lines

The commission in an opinion by Commissioner McChord has denied the petition of the Lehigh Valley for a rehearing relative to the commission's decision refusing to allow the railway to continue an interest in the Lehigh Valley Transportation Company. The original decision was made in *Lake Line Applications under the Panama Canal Act* (33 I. C. C., 700). The petition did not request a rehearing on the evidence, but merely a reconsideration of the question whether a competitive relationship exists between the railway and the steamship company. The commission holds that no reason appears tending to show that the previous finding that the Lehigh Valley does or may compete with the Lehigh Valley Transportation Company within the meaning of section 5 as amended was in error (37 I. C. C., 77).

New York-Jersey City Ferry Rates

The commission in an opinion by Commissioner Clark holds that the Erie has not justified proposed increased rates for the ferriage of vehicles and animals between the railroad's terminus in Jersey City, N. J., and its ferry stations in New York City on the opposite side of the North River at Twenty-third and Chambers streets (37 I. C. C., 103).

STATE COMMISSIONS

The Texas Railroad Commission has authorized the railroads of the state to make increases in their rates on sash, doors, blinds and similar articles, effective on January 31.

The Quincy, Omaha & Kansas City has filed a petition with the Missouri Public Service Commission asking that it be eliminated entirely from the general rate advance case. This was one of the roads exempted by the United States Supreme Court in the decision sustaining the state maximum rate laws, and the road believes itself entitled to a different consideration from that accorded to all the roads in the state in the recent decision of the Missouri commission.

PERSONNEL OF COMMISSIONS

Charles D. McKelvey, engineer of the Public Utilities Commission of New Jersey, died December 17, at his home in Paterson, N. J., at the age of 67. Mr. McKelvey was born in Orange county, N. Y., and began railroad service in 1865 as a telegrapher on the Erie. He served as operator, trainman and despatcher on a number of roads, and in May, 1884, was appointed superintendent of the New York, Susquehanna & Western. In 1889 he left that road and for a short time was manager of the Grand Central Terminal, New York City; but he soon returned to the Susquehanna and remained with that company until 1899, when he retired as general superintendent. He was appointed an inspector of the New Jersey Commission in 1910. For several years he was a member of the Board of Public Works of the City of Paterson.

COURT NEWS

The United States District Court at Portland, Oregon, has returned a decree in execution of the United States Supreme Court decision in the Oregon & California land grant case. The court holds that an equity of $2.50 an acre in the 2,300,000 acres of land constituting the Oregon & California land grant is the sole right and interest of the Southern Pacific Company therein. Under the decree the Southern Pacific is temporarily enjoined from selling any of the land at any price, and permanently enjoined from selling at a greater price than $2.50 an acre, or to persons other than bona fide settlers. It is also enjoined from removing or disposing of timber or mineral now on or in the land until Congress shall have had a reasonable opportunity to enact legislation for disposal of the land. The costs of the suit are assessed against the Southern Pacific.

Alternating Current Signal Apparatus Free of Royalty

In the United States District Court at Portland, Me., December 17, Judge Hale, a decision was rendered for the defendants in the suit of the Union Switch & Signal Company against the Hall Switch & Signal Company for infringement of the Struble patent, owned by the Union company, on alternating current apparatus used in automatic block signaling. The Hall company had used alternating current track circuit apparatus on the new subway in Brooklyn at Myrtle avenue. The Federal Signal Company jointly defended the suit with the Hall company. The court finds that if Struble's claims as to selective signaling by the use of alternating current are to be broadly construed they were anticipated by the patent of H. W. Spang, issued more than 40 years ago.

Liability for Conductor's Error

A passenger delivered his ticket to the conductor on a sleeping car and the conductor failed to return it, but gave it to some other passenger, resulting in the owner's ejectment. The Alabama Court of Appeals held the railroad responsible for the act of the conductor, and therefore liable in at least nominal damages.—L. & N. v. Laney (Ala.), 69 So. 993.

Furnishing Cars—Local Agents' Authority

The Illinois Appellate Court holds that the promise of the local agent of a railroad company and its train despatcher to supply cars to a shipper on the tracks of another railroad is not binding on the former company; and the fact that it had previously ratified similar conduct does not make it liable for failure to supply such cars.—Bullard-Johnson S. & L. Co. v. O. S. L., 192 Ill. App. 387

Fires—Contributory Negligence of Owner

The owner of a barn adjacent to a right of way left a window therein (which faced the railroad) open. The interior was littered with loose straw and a spark from an engine fired the straw and destroyed the barn. The Texas Supreme Court held that the owner's contributory negligence in leaving the window open debarred any recovery by him against the road. St. Louis Southwestern v. Arey (Tex.) 179 S. W. 860.

Fires—Other Engines Emitting Sparks

In an action for the burning of a factory it was claimed that the fire was caused by sparks from engine No. 123. The North Carolina Supreme Court held that it was not competent to prove that an engine, not identified as No. 123, threw live sparks which fell where the burned building had stood, in the absence of proof of similar conditions of the engines, if it was another, as well as similarity of conditions and manner of operation.—Kerner v. Southern Ry. (N. C.), 86 S. E. 998.

Interstate Carriers Not Insurers of Goods

By the Carmack amendment carriers of interstate shipments are not liable as insurers and the liability imposed is limited to loss caused by the carrier where some default is plainly implied. So the Oklahoma Supreme Court holds, in an action for injury to an interstate shipment, that a charge to the jury that the railroad was liable as an insurer was reversible error. It had the right to have the question of its negligence submitted to the jury.—Missouri, O. & G. v. French (Okla.), 152 Pac. 591.

Excursion Tickets—Time Limit

The purchaser of an excursion ticket limited on its face to a certain day and hour who uses it on a train scheduled to reach that place after the expiration of that time must pay additional fare from the point reached by the train at the expiration of the time limit. The representation of the agent at the starting point that the ticket could be used on that particular train would not waive the stipulation, it not appearing that the agent had authority to alter the original contract.—Shoenig v. A. C. L. (Ga.), 86 S. E. 940.

Government Tables of Shrinkage of Stock as Evidence

In an action for damages for negligent transportation of animals, the Texas Court of Civil Appeals held it proper to exclude tables of the Department of Agriculture and of the Texas Cattle Raisers' Association as to tests of shrinkage of stock in transportation where there was nothing to show that they were accurate or authentic. The court held that a document purporting to have been issued by the government has no more weight as evidence than documents issued by any other authority.—Missouri, K. & T. v. Dale Bros. Co. (Tex.), 179 S. W. 935.

Lien for Construction Material

In an action by a lumber company for the purchase price of ties used in the construction of a railroad the principal question was whether the plaintiff had a lien against the road for the value of the ties. Statutes giving liens for labor and material furnished in the construction of railroads are quite common. Kansas formerly had one passed in 1865, but the revision of 1868 resulted in its repeal. The Kansas Supreme Court holds that without such statute no lien arises from the mere fact that material sold for that purpose is used in the construction of the road.—Chatten Lumber Co. v. Scott City Northern (Kan.), 152 Pac. 665.

Household Furniture

In an action for damages to an interstate shipment of household goods, total weight 2,200 pounds, it appeared that the plaintiff signed a bill of lading containing the provision, "Owner's risk, value $10.00 a hundredweight." A piano included in the shipment was damaged, and the Kansas Supreme Court held that it was error to follow the theory of market, instead of actual value. The piano could be repaired and used by the plaintiff, although after the injury it had practically no market value. A rug worth $21 weighed less than 100 lb. Two rates were in force, of which the shipper is presumed to be aware, and he was bound by that named in the bill of lading, and could recover only for the weight of the rug at $10 a hundred pounds.—Collins v. Union Pacific (Kan.), 152 Pac. 649.

Explosion in Stored Car—Injuries to Fireman

A railroad company stored a car containing combustible material in its yard. Some of this exploded, causing a fire, resulting in other explosions. The fire department was called and a fireman was injured by an explosion. In an action against the railroad the Texas Supreme Court held that, inasmuch as the company's negligence was the proximate cause of the explosion setting the fire, as well as the subsequent one by which the plaintiff was injured, the company's negligence was a continuing cause and the plaintiff's situation, as well as the duty of the company, was the same as if he had reached the premises before the first explosion occurred and it had caused his injuries.—Houston Belt & Terminal v. Johansen (Tex.), 179 S. U. 853.

Attorney's Fee; Compromise by Client

The Arkansas Supreme Court holds that an attorney, after the compromise or settlement in good faith by his client of a claim upon which suit has been brought, is bound by the terms of his contract as to the amount of his fee, and is only entitled to that per cent of the amount realized from the settlement or judgment which was fixed by his contract. By contract with their client, a law firm was to receive 50 per cent of any amount derived from recovery or compromise of an action against a railroad. The client settled the claim for $25, as he had a right to do, either without their consent or over their objection. It was held the railroad was only bound to them for $12.50, the half of the sum paid in settlement of the claim.—St. Louis, I. M. & S. (Ark.), 179 S. W. 648.

Fires Caused by Acts Outside Scope of Employment

In Kansas the rule that an employer is not liable for the consequences of negligent acts of his employee committed outside the scope of his employment has been applied by the Supreme Court in an action for damages resulting from a fire maintained by laborers for their own domestic purposes on the right of way. The court cited the leading case of Morier v. St. Paul, M. & M., 31 Minn. 351. There sectionmen in charge of a foreman engaged in repairing track built a fire on the right of way to warm their coffee for dinner. After dinner they resumed work without extinguishing the fire, which spread to adjoining premises and burned the plaintiff's hay. It was held that the railroad was not liable.—Ireton v. Atchison, T. & S. F. (Kan.), 152 Pac. 625.

Damages to Fireman for Permanent Injuries

A fireman, 32 years of age, who earned $100 a month and was in the best of health, capable of undergoing the most strenuous exertion, was badly injured in a collision. His right leg from the knee down was caught between the tank on the tender and the boiler head in the cab and so roasted by the boiler that it had to be amputated, and the wound was not healed a

year after the accident; and he was unable to do any work. The Virginia Supreme Court of Appeals, finding the collision due to the company's negligence in giving wrong signals, held that an award of $25,000 against the railroad was not so plainly excessive as to justify the court's disturbing it, although if it could have usurped the functions of the jury, it might have said that it should have been less.—Chesapeake & O. v. Carnahan (Va.), 86 S. E. 863.

Reasonable Notice of Demand for Cars

The West Virginia Supreme Court of Appeals holds that an application to a station agent for cars for a shipper's use on a particular day, made in the ordinary way, by one who has not been accustomed to make special contracts to furnish cars for particular dates, and without notice of intention or purpose to bind the company absolutely to furnish the cars on the day named, and the promise of the agent, in response to such application, that he would get the cars, do not prove a contract on the part of the railroad, binding it absolutely to furnish them on the day named. It was held that three days' notice of a demand for cars for live stock, in a period of great activity in such shipments, was not reasonable or sufficient. The court found that every effort was made to get the cars and the time required was just one week.—McNeer & Co. v. C. & O. (W. Va.), 86 S. E. 887.

Employers' Liability Act

A lineman of an electric railroad, engaged in interstate as well as intrastate commerce, killed while putting additional cross-arms on its poles for transfer thereto of the single wire used in its "hand" signal system and the stringing of additional wires to change the system to an "automatic" one, was held by the Iowa Supreme Court to be employed in interstate commerce, so that the cause of action for his death was under the federal employers' liability act, this work being "repair" or "maintenance" and not "construction."—Rose v. Sheldon (Iowa), 154 N. W. 499.

The South Carolina Supreme Court holds that an injury received by a car repairer, while raising a fallen drawhead to standard height during the temporary stoppage of the car for that purpose, while in interstate transit, falls within the federal employers' liability act.—Lorick v. S. A. L. (S. Car.), 86 S. E. 675.

Prescriptive Title to Railroad Land

A hotel was built partly on land belonging to a railroad, and the successive owners of the hotel knew it stood on the railroad land, and claimed no right therein, keeping possession under the mistaken belief that merely by going upon land they knew was owned by another and being suffered to remain in possession for 10 years they would acquire title by prescription under the Wyoming statute. In an action by the railroad to recover possession of the land, the Wyoming Supreme Court held that the defendants' possession for 10 years did not ripen into title by prescription. To have that effect the possession must not only be open, notorious, exclusive and continuous for the full 10-year period of the statute, but must also be taken and held either under color of title or claim of right. To acquire title by occupation and possession a man, in a case like this, must have a belief in his own mind that he possesses a right as owner. —Bolin v. Colorado & S. (Wyo.), 152 Pac. 486.

"Lookout Ahead" and Speed on a Curve

In an action for the death of a person struck by a train while he was standing on a sharp curve, it was the railroad's theory, sustained by proof, that a southbound train was so interposed between the deceased and the engine that struck him that he and his companion could not be seen from the engine. The Tennessee Supreme Court holds that, under Shannon's Code, section 1574, providing that every railroad company shall keep the engineer, fireman or some other person upon the locomotive always on the "Lookout ahead," enginemen are not required, when on a curve, to look across the intervening space to the further end of the curve, thereby withdrawing the lookout from the track immediately ahead of the engine.

It also holds that, as a precaution against injury to persons walking on the track, but not seen, there is no duty to slacken the speed of a train approaching a curve in the open country, although the curve be in whole or in part in a cut or the track be hidden from view by a train going in the opposite direction on the concave side of the curve.—Cincinnati, N. O. & T. P. v. Wright (Tenn.), 179 S. W. 641.

Excessive Rates on Milk

In an action to recover excessive freight charges neither party attempted to show the reasonableness or unreasonableness of the rate of itself. The South Dakota Supreme Court held that in such a case under the state law which places the burden of proof on the carrier to show the reasonableness of the rates when they are attacked in a proceeding before the railroad commissioners, and making evidence of the lowest prevailing rate for similar service elsewhere prima facie evidence of a reasonable rate, the parties may adduce comparative evidence of other rates on the question of reasonableness. Evidence that express rates on milk between certain points were higher than the railroad's rates between the same points was held not to establish the reasonableness of the railroad's rates, where it did not appear that the service rendered was the same. The express company maintained a free "pick-up" service and a free delivery service, which the railroad did not do, and the tariff recited that while on the platform the milk cans were at the owner's risk. A through rate for the carriage of milk between certain points which exceeded the total of local rates over the same line and distance was held to be an unreasonable rate.—Turner Creamery Co. v. Chicago, M. & St. P. (S. Dak.), 154 N. W. 819.

Overexertion in Lifting Heavy Articles

A section gang was engaged in cutting weeds on a track. They used a hand car, which was moved off the track on the approach of a train; the section foreman keeping a watch for trains. A workman suffered an inguinal hernia while assisting in removing the car, and sued for damages, recovering a verdict. On appeal, the Minnesota Supreme Court directed judgment for the railroad notwithstanding the verdict. It is the general rule that a master is not liable for an injury to his servant caused by overexertion in lifting heavy articles, as the servant is the best judge of his own lifting capacity, and the burden is on him not to overtax it. Stenvog v. Minnesota Transfer, 108 Minn. 190. The plaintiff recognized this rule, but contended that the foreman did not discover the approaching train until it was so near that great haste was necessary to avoid a collision; that in the exercise of proper care the foreman ought to have discovered the train in time to permit the removal of the hand car without such haste; and that the negligence of the foreman in this respect brought about the situation which caused the plaintiff to overexert himself. A careful examination of the evidence was held to show no such negligence.—Creamus v. Great Northern (Minn.) 154 N. W. 616.

Libel in Letter Charging Station Agent with Intoxication

In our issue of November 12 last appeared an abstract of a decision in which a letter from a passenger to a railroad general agent charging a conductor with intoxication and rudeness was held to be a libel, being malicious. A very similar case has recently been handed down by the Pennsylvania District Court, the parties being the general superintendent of a large shipper of the line and a station agent, between whom had existed for a long time a deep-seated ill-feeling. The alleged libel was contained in a letter to the president of the railroad, which stated that the station agent had, the day before, been "so drunk he hardly knew his name." It was held that such a letter is not a privileged communication if written and mailed maliciously. The jury were instructed, however, and it was held, properly, that if they found as a fact that the plaintiff was intoxicated on the day mentioned in the letter, their verdict must be for the defendant; and if they found that he was not intoxicated on that day, even then their verdict should be for the defendant if the charges were lodged in good faith, for the purpose of bettering the situation at the station, and without malice. The jury found that the letter was sent maliciously, and returned a verdict of $1,000 damages. As no special damages had been alleged or proved, this was reduced to $700 on appeal.—Peterman v. Dewey, 24 Pa. Dist. 920.

Receivers—Allowance of Claims for Supplies

The Circuit Court of Appeals, Eighth circuit, in a suit against the Kansas City, Mexico & Orient and others, holds that the claim of a creditor for payment out of the corpus of railroad property for necessary supplies (in this case tanks and culverts) furnished to a railroad company and used in the operation of the road, is inferior in equity to the claims of bondholders under a prior mortgage, and is not entitled to preference in payment over them, there being no diversion to the payment of unpreferred claims of current income from the payment of current expenses for wages, materials, supplies, and such necessities of operation. The expectation of the seller of supplies that its claim would be paid out of the current earnings of the company is not sufficient to take it from the class of general claims and place it in the class of preferential claims. If it were sufficient for the purpose, liens of prior mortgages on railroads would be idle, for nearly all general creditors undoubtedly expect payment out of the current incomes of the companies. Even loans of money to pay current expenses, or to keep a railroad company a going concern, in reliance on and in expectation of payment out of the current earnings of the company, are ineffectual to transfer claims for their payment, otherwise without equitable preference, to the class of preferential claims. —Martin Metal Mfg. Co. v. U. S. & M. Trust Co., C. C. A., 225 Fed. 961.

Undercharge Recovery—Plainness of Tariff

In an action to recover an undercharge it appeared that the defendant shipped 27 car loads of cattle from Groom, Tex., to Meade, Kan., over the lines of the plaintiff and connecting carriers. The rate charged was $35 per car load. The lawful rate was $47.50. The defendant claimed as a set-off damages on another shipment of cattle. But the other shipment was made under a contract prescribing that no recovery should be had unless an action was brought within 6 months; and this condition precedent was disregarded. The Kansas Supreme Court therefore held that no set-off could be allowed.

It was claimed that the tariff did not conform to section 2 of the Interstate Commerce Act requiring plainness of statement and printing. Some 25 railroads participated in the tariff, which was approved by the commission. The contention was not sustained. The court said: "The statutory provision requiring simplicity in railroad tariffs is satisfied when it is made as plain as a subject inherently complex will permit. Tariffs and their arrangement with reference to simplicity follow the outlines prescribed by the Interstate Commerce Commission, and must meet the approval of that tribunal. Ordinarily the courts make no mistake in deferring to its expert judgment touching the best methods of complying with the statutory mandate as to plainness and lucidity."—Chicago, R. I. & P. v. Theis (Kan.), 152 Pac. 619.

Keeping Trespasser Off Train—Duty of Conductor

A trespasser on a train had been repeatedly put off, the train being stopped for the purpose. On the final occasion he ran after the train, overtook it and attempted to board it at the rear steps in spite of the resistance of the conductor. It was claimed in an action for his death that he was pushed off by the conductor, and fell on the track. The train, which was passing around a curve, was not stopped. Next day the mangled body of the deceased was found on the track near the spot. It was held by the Iowa Supreme Court that a verdict and judgment for the plaintiff were not supported by the evidence. Clearly it was the duty of the conductor to prevent the deceased from boarding his train. To that end he was required to exercise all the reasonable means within his power, and this implied the use of a reasonable degree of force. The attempt of the deceased to board the train at the very point where the conductor was standing guard to prevent him was wanton and reckless in the extreme. His act was not only a violation of the statute forbidding the boarding of trains in motion, but it amounted to an assault upon the conductor, and created a position of manifest peril to the conductor. That his attempt should fail was a natural and probable result. Whether the conductor ought afterwards to have stopped his train would depend upon the question of whether he knew or ought to have known that the deceased was rendered too helpless to remove himself from the track. It was possible that this did happen, and that he was thereby run over by a later train, but it was by no means proved.—Hawthorne v. Delano (Iowa) 154 N. W. 590.

Taxation of Express Companies in South Dakota

The suits by Wells, Fargo & Company and the American Express Company to enjoin the state of South Dakota from assessing certain taxes levied against the companies for the year 1910 have been decided in favor of the companies by the United States Supreme Court. Under the state law, Wells, Fargo & Company made a statement showing gross earnings within the state for the year ending April 30, 1910, of $131,096, and value of office furniture, fixtures and real estate, $18,474. The State Board of Assessment and Equalization assessed the value of the company's property at $289,877, and imposed a tax of twenty-eight mills on the dollar, making a total tax of $8,116. Similarly, the board assessed the value of the American Express Company at $193,260, and levied a tax of $5,411. The companies' bill averred a tender of taxes upon the returns, and charged that the assessments were a violation of the state constitution, and, if enforced, would have the effect of taking the property of the companies without due process of law, in violation of the federal constitution.

The state constitution, as in force at the time of the assessments (in this respect it is still practically the same), provided that the levy of taxes on corporate property should be made as nearly as possible in the same way as on individual property, and that all taxes should be levied in proportion to the value of the property. It appeared that the express companies doing business in the state in 1909 and 1910 were under contracts with the railroads to pay to the latter from 45 per cent to 55 per cent of their gross earnings from the transportation of express business over their lines, and that this payment, if not the only basis of the assessments made by the board, was the principal factor in fixing the value of the express companies within the state. The South Dakota statutes, other than those relating to railroads, telephone, telegraph, express and sleeping car companies, do not authorize a valuation which considers gross income, and individuals and other corporations are taxed according to the value of their property, without reference to the income derived therefrom. In other words, property owned by other corporations and individuals is assessed for what it is fairly worth, and a valuation for taxation is not fixed by a method which gives controlling effect to the amount of the gross income derived therefrom. The Supreme Court concurred with the opinion of the Circuit Court of Appeals that such procedure is in violation of the provision of the South Dakota constitution, above referred to, and affirmed that court's judgment in favor of the express companies.—(Decided November 29, 1915.)

Demurrage in Bad Weather—Commission Cannot Order Refund

The New York State Supreme Court, appellate division, holds that the Public Service Commission is without power to direct a common carrier to refund freight payments found by the commission to be excessive, provided the sum which has been collected is correct according to the published tariff. The court, with Justice Laughlin dissenting, held that the commission may determine the just and reasonable regulations to be observed by the carrier, but that its power is confined solely to violations of such determinations in the future, and that the commission has not the power, after a determination, to direct the repayment of charges already collected. The prevailing opinion was written by Justice Scott.

In his dissenting opinion, Justice Laughlin holds that not only has the Public Service Commission the right to determine as to the reasonableness of charges, but it has power to "order the defendant to make reparation by refunding the amount exacted in excess of the amount found to be just and reasonable."

The decision was handed down in a suit brought by Edward D. Murphy and William P. Murphy, in the hay and grain shipping business, against the New York Central. The railroad charged and collected from them between November 1, 1907, and May 20, 1910, $178 for "track storage" on consignments of freight at Melrose Junction. The Murphys contended these charges were excessive and took their complaints to the Public Service Commission of the Second District, which ruled that the track storage charges, so far as they related to days which, owing to bad weather, made it impossible to unload the freight, were unreasonable.

Railway Officers

Executive, Financial, Legal and Accounting

Edgar J. Rich, general solicitor of the Boston & Maine at Boston, Mass., has resigned.

Edgar M. Williams, second vice-president of the Southern Express Company, at Chattanooga, Tenn., has been elected vice-president, succeeding Charles L. Loop, deceased.

Arthur E. Sweet, general manager of the Second district of the Chicago, Rock Island & Pacific, with office at Topeka, Kan., has been elected vice-president of the Denver & Rio Grande, succeeding E. L. Brown.

Operating

L. M. Dooley has been appointed inspector of transportation for the Texas & Pacific, at Dallas, Tex., instead of superintendent of transportation, as announced in these columns recently.

The office of G. W. Clark, general superintendent of the Central New England, has been transferred from Hartford, Conn., to Poughkeepsie, N. Y. At the same time 34 members of the office forces move from Hartford to Poughkeepsie.

Charles H. Smith, trainmaster of the Green Bay & Western, with office at Green Bay, Wis., has been appointed superintendent of the Green Bay & Western, the Kewaunee, Green Bay & Western and the Ahnapee & Western, effective January 1.

L. L. McIntyre, whose appointment as superintendent of the Carolina, Clinchfield & Ohio, at Erwin, Tenn., has already been announced in these columns, was born on October 4, 1874, at McColl, S. C., and was educated in the common schools. He began railway work on June 1, 1892, with the Cape Fear & Yadkin Valley, now a part of the Atlantic Coast Line, as a clerk and relief agent. In July, 1893, he went to the Norfolk & Western as clerk and operator at Welch, W. Va., remaining in that position until the following September. He was then engaged in yard and coal and coke weighing and billing service at various points on the Pocahontas division of the same road until January, 1898, when he was appointed train despatcher at Bluefield, W. Va. On May 1, 1902, he was appointed night chief despatcher; then from November, 1904, to July, 1906, was chief despatcher. From July, 1906, to March, 1909, he was car distributor of the same road. On March 15, 1909, he went to the Carolina, Clinchfield & Ohio as car service agent at Erwin, Tenn. In April, 1911, he was appointed trainmaster at the same place, which position he held at the time of his recent appointment as superintendent of the same road as above noted.

Traffic

John Dunphy has been appointed assistant general passenger agent of the Pere Marquette, with headquarters at Detroit, Mich.

H. B. Hatch, contracting freight agent of the Illinois Central at San Francisco, Cal., has been appointed freight and passenger agent, with office at Fresno, Cal.

S. F. Hilton, agent of the freight department of the Union Pacific at Fresno, Cal., has been appointed district freight agent at the same place, effective January 1.

William P. Behen, contracting freight agent of the Cincinnati, Hamilton & Dayton, has been appointed commercial agent of the Cincinnati, Indianapolis & Western, with headquarters at Chicago.

Robert C. Haase, northwestern passenger agent of the Baltimore & Ohio, with headquarters at St. Paul, Minn., and Minneapolis, has been appointed district passenger agent at Philadelphia, Pa., succeeding Bernard N. Ashby, resigned. H. C. Strohn, traveling passenger agent at Omaha, Neb., has been promoted to northwestern passenger agent.

O. S. Lewis, whose appointment as assistant general freight agent of the Baltimore & Ohio, Southwestern and the Cincinnati, Hamilton & Dayton has been announced, began his railroad career as an employee in the accounting department of the Baltimore & Ohio. Later he was stationed at Lawrenceburg, Ind., as agent, and subsequently was promoted to chief clerk in the office of the division freight agent at Vincennes, Ind. He served in the general office of the road for seven years and in 1912 was sent to Dayton, Ohio, as division freight agent.

Engineering and Rolling Stock

Joseph Gilkison has been appointed roadmaster of the Chicago, Terre Haute & Southeastern, vice William Padden, deceased.

K. B. Duncan has been appointed valuation engineer of the Atchison, Topeka & Santa Fe, eastern lines, in connection with the Kansas rate case.

Frederick A. Bonz, assistant engineer of the Buffalo, Rochester & Pittsburgh, has been promoted to division engineer, Divisions 1, 2 and Erie division, with office at Rochester, N. Y.

George J. Adamson, formerly special engineer of construction for the Union Pacific, with office at Omaha, Neb., has been appointed division engineer of the Wyoming division, with headquarters at Cheyenne, Wyo. George F. Maitland has been appointed division engineer of the Kansas division, with office at Kansas City, Mo.

Purchasing

Harvey DeCamp has been appointed purchasing agent of the Gulf & Ship Island, with office at Gulfport, Miss.

Special Officers

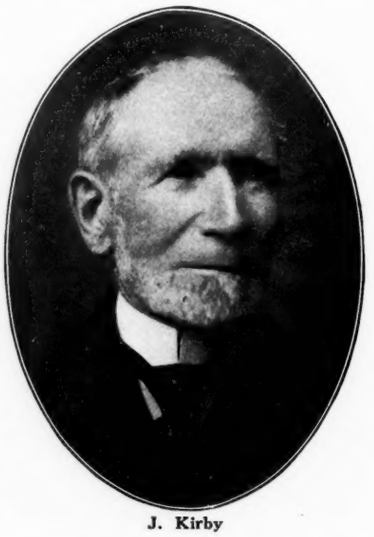
F. A. Greene, chief inspector of the insurance department of the Pennsylvania Railroad, has been appointed assistant superintendent of the insurance department of the Pennsylvania system, effective January 1.

OBITUARY

R. H. Montgomery, superintendent of the New York Central shops at Collinwood, Ohio, died at his home in Cleveland, on December 14.

Joseph B. Redfield, for 60 years in the service of the Chicago & North Western, and most of that time as auditor and assistant secretary, died at his home in Chicago, Ill., on December 20. About five years ago Mr. Redfield retired from his duties as auditor and engaged in the compilation of historical matter connected with the railway. He was a graduate of Union College, Schenectady, N. Y., and was born on September 25, 1825.

John Kirby, formerly from October, 1870, to October, 1892, general master car builder of the Lake Shore & Michigan Southern, died on December 8, at Adrian, Mich. Mr. Kirby was born in October, 1823, in Oxfordshire, England, and was educated in the common schools. He began railway work in May, 1848, and until 1854 was engaged in repairing cars on the Syracuse & Utica, which is now a part of the New York Central. He was then to September, 1856, engaged in repairing and building cars on the Michigan Southern at Adrian, Mich. From September, 1856, to September, 1858, he was foreman of shops on the same road at Adrian; then to October, 1870, was master car builder of the Michigan Southern & Northern Indiana, which subsequently became a part of the Lake Shore & Michigan Southern, which is now a part of the New York Central. In October, 1870, he was appointed general master car builder of the Lake Shore & Michigan Southern, remaining in that position until October, 1892. Mr. Kirby was president in 1891 and 1892 of the Master Car Builders' Association, and from 1900 to 1909 was treasurer of the same association.



J. Kirby

Equipment and Supplies

LOCOMOTIVES

THE INTERCOLONIAL will install superheaters on 100 locomotives.

THE LEHIGH VALLEY has issued inquiries for 15 switching locomotives.

THE EDMONTON, DUNVEGAN & BRITISH COLUMBIA is inquiring for two superheater locomotives.

THE GRAND TRUNK PACIFIC will install superheaters on 47 Consolidation and Mikado locomotives.

THE UNION RAILROAD has ordered five Consolidation locomotives from the Baldwin Locomotive Works.

THE TAVARES & GULF has ordered one Prairie type locomotive from the Baldwin Locomotive Works.

THE NORFOLK SOUTHERN has ordered four Consolidation locomotives from the Baldwin Locomotive Works.

THE PRESCOTT & NORTHWESTERN has ordered one Mikado locomotive from the Baldwin Locomotive Works.

THE NORFOLK & PORTSMOUTH BELT LINE has ordered one six-wheel switching locomotive from the Baldwin Locomotive Works.

THE OZAN GRAYSONIA LUMBER COMPANY, Prescott, Ariz., has ordered two Mikado locomotives from the Baldwin Locomotive Works.

THE DELAWARE, LACKAWANNA & WESTERN, reported in last week's issue as contemplating the purchase of locomotives, will buy 10 Mikado and seven Pacific type locomotives.

THE CHICAGO GREAT WESTERN, which was reported in last week's issue as having ordered five Mikado locomotives from the Baldwin Locomotive Works, has increased this order to 10 locomotives.

THE NEW YORK CENTRAL has ordered one Mountain type locomotive from the American Locomotive Company. It is also further reported to be contemplating the purchase of other locomotives.

FREIGHT CARS

THE CENTRAL VERMONT is in the market for 1,000 box cars.

THE UNION PACIFIC is in the market for a number of box and stock cars.

THE EAST BROAD TOP RAILROAD is in the market for five narrow gage hopper cars.

THE NEW YORK, PHILADELPHIA & NORFOLK is in the market for from five to 10 cabin cars.

THE CHANUTE REFINING COMPANY is inquiring for prices on 50 8,000-gal. capacity tank cars.

THE DULUTH & IRON RANGE has ordered 100 flat cars from the American Car & Foundry Company.

THE SOUTHERN EXTRACT COMPANY has ordered 10 tank cars from the American Car & Foundry Company.

THE BETHLEHEM CHILE IRON MINES COMPANY has issued inquiries for 25 100,000-lb. capacity steel ore cars.

THE STANDARD OIL COMPANY, Whiting, Ind., has ordered three steel coke cars from the American Car & Foundry Company.

THE LONG ISLAND, reported in the issue of November 19 as being in the market for 100 gondola cars, has ordered 100 long gondola cars from the Pressed Steel Car Company.

THE NEW YORK, PHILADELPHIA & NORFOLK, reported in last week's issue as being in the market for 45 to 60 steel underframe box cars, has ordered these cars from the American Car & Foundry Company.

THE MICHIGAN CENTRAL, reported in the *Railway Age Gazette* of November 5 as having ordered 150 40-ton box cars from the Canadian Car & Foundry Company, ordered only underframes for 150 50-ton flat cars from that company.

THE IMPERIAL OIL COMPANY, LTD., Sarnia, Ont., has ordered 100 40-ton tank car bodies and trucks from the Canadian Car & Foundry Company for part of the 235 cars mentioned in an item in the *Railway Age Gazette* of December 10.

THE NEW YORK, NEW HAVEN & HARTFORD, reported in last week's issue as contemplating the purchase of 500 coal cars, has ordered these cars from the Standard Steel Car Company. It will also buy 20 milk and 50 refrigerator cars, not 500 refrigerator cars as reported in last week's issue.

PASSENGER CARS

THE WABASH is inquiring for prices on 6 postal cars.

THE LONG ISLAND, reported in the *Railway Age Gazette* of November 26 as being in the market for six parlor cars, 10 baggage cars and 25 trailer coaches, has ordered the 25 trailer cars from the Standard Steel Car Company.

THE NEW YORK MUNICIPAL, reported in the *Railway Age Gazette* of December 10 as inquiring for prices on 100 subway cars, has ordered these cars from the American Car & Foundry Company. These cars are for the Sea Beach Line, and constitute the fourth 100 ordered for this service from the same company.

THE NEW YORK, NEW HAVEN & HARTFORD.—The item in the issue of December 3, giving the division of the order for 100 passenger cars, placed with the Osgood-Bradley Car Company, was incorrect. The Osgood-Bradley Car Company has been authorized to proceed with the construction of 100 all-steel passenger train cars, as noted, but these will include 65 coaches and 35 baggage cars.

THE NEW YORK CENTRAL, reported in the *Railway Age Gazette* of December 10 as having issued inquiries for 30 to 60 70-ft. coaches, has placed orders for 105 cars as follows: Barney & Smith Car Company, 15 coaches for the Cleveland, Cincinnati, Chicago & St. Louis; Osgood-Bradley Car Company, 25 for the Boston & Albany; American Car & Foundry Company, 45 for the New York Central itself, and the Standard Steel Car Company, 20.

TRACK SPECIALTIES

THE GREAT NORTHERN has ordered 175,000 tie plates, 7,000 kegs of track spikes, 8,000 kegs of bolts and 90,000 angle bars from the Lackawanna Steel Company.

IRON AND STEEL

THE BALTIMORE & OHIO has ordered 300 tons of bridge steel from the Mount Vernon Bridge Company.

THE FRENCH GOVERNMENT has given the Maryland Steel Company an order for 90,000 tons of rails and fittings.

THE SOUTHERN RAILWAY has ordered 1,300 tons of bridge steel from the Virginia Bridge & Iron Company.

THE PENNSYLVANIA has ordered 435 tons of steel from the Pennsylvania Steel Company for an ore handling bridge on the Pennsylvania dock at Erie, Pa.

THE TOLEDO, ST. LOUIS & WESTERN has divided an order for 10,000 tons of 85-lb. rails between the Illinois Steel Company and the Carnegie Steel Company.

THE GREAT NORTHERN has divided an order for 8,000 tons of rails among the Illinois Steel Company, the Cambria Steel Company, the Lackawanna Steel Company and the Colorado Fuel & Iron Company.

SIGNALING

THE PHILADELPHIA & READING has given to the Federal Signal Company the contract for installing automatic signals on its line, double track, between Newberry Junction, Pa., and Lewisburg, 36 miles.

A mechanical interlocking plant is to be installed at Dun Loup, W. Va., at the crossing of the Chesapeake & Ohio and the Kanawha, Glen Jean & Eastern. The Federal Signal Company has the contract.

THE GREAT NORTHERN plans to install during the coming year automatic block signals on 200 miles of its line. The plans for the year include also the installation of a 22-lever interlocking plant at Aberdeen, S. D., where the line crosses the Chicago, Milwaukee & St. Paul; and a nine-lever interlocking at Calumet, Minn., where the line crosses the Duluth, Missaba & Northern.

THE ALABAMA GREAT SOUTHERN plans during the coming year to install automatic block signals on five miles of line. This number of miles is exactly the difference between the mileage reported as now operated under automatic block signals and the total mileage of road on which the passenger trains are run, indicating that at the end of the year the whole of the line will be signaled.

THE ILLINOIS CENTRAL plans to install automatic block signals during the coming year on 180 miles of its lines as follows: Gilman, Ill., to Mattoon, 90 miles double track; Dugan, Ky., to Cecilia, 8 miles; East View to Leitchfield, Ky., 14 miles; Horse Branch, Ky., to Beaver Dam, 12 miles; Rockport, Ky., to Mercer, 12 miles, and Eddyville, Ky., to Paducah, 35 miles, all single track; Woodstock, Tenn., towards Memphis, 8 miles single track, and Branch Junction, Ill., to Centralia, 2 miles, double track.

THE ERIE will install automatic block signals in 1916, in place of the manual block system, on 84 miles of road, namely: Solon, Ohio, to Cleveland, 16 miles double track; Kent, Ohio, to Leavittsburg, 27 miles double track; Buchanan Junction, Pa., to Pymatuning, 26 miles single track and 6 miles double track; Columbus, Pa., to Niobe Junction, 9 miles. Also on the controlled line, the New York, Susquehanna & Western, automatic block signals will be installed on 14 miles, double track, to take the place of the manual block system.

THE INDO-CEYLON RAILWAY.—It has been proposed to make the Indo-Ceylon Railway into a railway throughout by constructing a line along Adam's Bridge. At the meeting of the South Indian Railway on November 17, it was stated that the existing railway and ferry steamer service—which was only opened less than two years ago—was causing a great deal of trouble and was being operated at a very considerable loss. It was instituted at the special instance of the merchants, planters, people and government of Ceylon, and unless some satisfactory understanding could be come to with the Ceylon Government Railway it might become necessary either to close the route altogether or to run the service periodically, and then only for passengers.

RAILWAY DEVELOPMENT IN EASTERN MANCHURIA.—Some interesting details regarding Japanese railway development in Eastern Manchuria have recently been published in the Far East. Although the entire line from Antung to Mukden, 170 miles in length and costing $10,000,000 to reconstruct, is devoid of any cities of importance, except Penchilin, which, about 40 miles southeast of Mukden, is in the center of a coal-mining district, the Japanese are busily engaged in opening up the mineral wealth of the country and constructing branch and light lines. Near Penchilin two modern smelting plants have been installed and iron ore is obtained at the Miao-Kou Iron Mine, some five miles from Nan Fan Station and connected with it by a light railway. Near the station of Nui-hsin-tai is situate another colliery, known as the Ho Lien Kuo, and from this a light line is to be built by the Japanese to Chien Chang, 53 miles to the north, for the purpose of carting timber from the forests. A new line is also to be built between Kaiyuan and Hailungsen, as there is plenty of coal from the Sha Ting Kang mines to work them. On the other hand, a group of Chinese merchants have formed a syndicate to build a light railway from Fushun, at the end of the Mukden extension, to Shing Ching, where there is a good supply of timber, which is greatly needed for the Fushun collieries. It is a sign of the times that it is reported that the Fengtien Branch of the Bank of China has agreed to finance the scheme, which needs $500,000. The Japanese have recently laid a Decauville railway through the city of Liaoyang itself.—*Railway Gazette, London.*

Supply Trade News

Wilfred R. Dean, vice-president of the Dean Brothers Pump Works, Indianapolis, Ind., died recently, after a prolonged illness.

S. K. Smith, treasurer of the Harlan & Hollingsworth Corporation, has also been elected vice-president, succeeding Persifor Frazer. Henderson Weir, secretary, has been elected a director.

A. L. Murphey, purchasing agent, and J. P. Coonahan, assistant purchasing agent of the Midvale Steel Company, have been appointed to similar positions with the Midvale Steel & Ordnance Company.

Frank Howard Bailie, assistant manager of sales of the H. K. Porter Company, Pittsburgh, Pa., died after a brief illness from pneumonia on Tuesday, December 14. Mr. Bailie had been associated with the company for 27 years.

Richard Henry Lee, superintendent of the Lebanon blast furnaces of the Pennsylvania Steel Company and consulting engineer of the American Manganese Manufacturing Company, died suddenly, December 8, of heart failure.

Charles E. Duncan, formerly with the Carnegie Steel Company, and at one time superintendent of the plant of the Algoma Steel Corporation, Ltd., Sault Ste. Marie, Canada, has been appointed general manager of the newly incorporated Donner Steel Company, Ltd., Buffalo, N. Y.

The Garland ventilator, which is in general use on railroad sleeping and parlor cars, has now been successfully applied to automobile trucks and pleasure cars, removing the heated air from the motor compartment and reducing losses in power, oil, burned out bearings, scored cylinders and damage to the radiator.

Henry C. Kloos, of the electrical staff of the Pullman Company, has accepted a position with the Franklin Railway Supply Company, New York. This company is now engaging in the manufacture and sale of car lighting equipment, and is placing upon the American market the "Stone" system of car lighting, hitherto manufactured in England and extensively employed abroad.

Announcement is made that the receivership of the Barney & Smith Car Company, Dayton, Ohio, came to an end December 15, following the negotiation of a loan of $600,000. There will be no change in the status of the stock and bondholders of the company. The officers of the company are as follows: President, H. M. Estabrook; vice-president and general manager, A. J. Stevens, and treasurer, A. F. Kiehofer. The board of directors will include these and Lawrence Maxwell, E. J. Barney, J. L. Oneil, E. N. Patten and C. L. Harrison.

The Boston Elevated Railway will build a creosoting plant of its own in Boston for the purpose of treating ties and other material. G. B. Shipley, consulting engineer, Pittsburgh, Pa., has been engaged to design the plant and superintend its construction. It will be a modern pressure creosoting plant, designed for any standard process, and will be fully equipped to meet all of the Boston Elevated requirements. This decision to use creosoting material comes after long experiments with various methods of wood preservation. The plant will be the first modern creosoting plant to be built in New England.

The American Steel Railway Cross Tie Company, Pittsburgh, Pa., has purchased the Maxey patents formerly owned by the United States Steel Railway Tie Company. The present management of the American Steel Railway Cross Tie Company is as follows: President, J. A. Langfilt, a Pennsylvania state senator for two terms; vice-president, W. S. Maxey, attorney-at-law and a prominent business man of Pittsburgh (this Mr. Maxey is not related to the Mr. Maxey who sold the patents to the company); treasurer, Oscar A. Adrian, of the Peoples Homewood Bank and treasurer of the Charles C. Wesley Real Estate Company, and secretary, Charles C. Wesley, president of the Charles C. Wesley Real Estate Company.

A new company with a capital of $150,000 is about to be organized under the leadership of Joseph C. Reed, until re-

cently in charge of the railway and government business of the Shapleigh Hardware Company, St. Louis, to take over the Southern Railway Supply Company of that city. W. D. Achuff, vice-president, and Ephron Catlin, Jr., secretary and treasurer of the Southern Company, will hold similar positions with the new company, the name of which has not yet been definitely decided. The new company, in addition to carrying in stock a full line of miscellaneous supplies for railroads, mines, mills and industrial corporations, will specialize and represent exclusively in the southwestern territory the Buda Company, the E. F. Houghton Company, the Verona Tool Works and other companies. It will also have the exclusive sales agency in the United States for the Saunders corrugated car-stopper.

The following is quoted from the New York Times, of December 23: A syndicate headed by Potter, Choate & Prentice and F. B. Keech & Co. has bought the Haskell & Barker Car Company at Michigan City, Ind., and will take steps to extend the business after new capital has been raised. An offering of 220,000 shares of stock without stated par value is expected in a few days. It is understood that the shares are being placed with the syndicate at $50 a share. Among the directors of the reorganized company are F. A. Vanderlip, president of the National City Bank; Ambrose Monnell, president of the International Nickel Company; William E. Corey, head of the Midvale Steel & Ordnance Company, and Arthur O. Choate, of the firm of Potter, Choate & Prentice. A large interest in the Haskell & Barker Car Company was held by Miss Catherine Barker, who was recently married to Howard Spaulding, Jr., secretary and general manager of the company. Control of the property has been in the hands of James B. Forgan, president of the First National Bank of Chicago; E. K. Boisot and T. J. McBride (president of the company) as trustees since the death of John Barker in 1910.

TRADE PUBLICATIONS

SAND BLASTS.—Bulletin No. 531, recently issued by the Pangborn Corporation, Hagerstown, Md., is a leaflet illustrating and describing the company's type "L. A." rotary table sand blast.

A RAILWAY CRANE.—The Bucyrus Company, South Milwaukee, Wis., has issued an eight-page pamphlet describing its Class 150-17 crane for wrecking and other railway purposes. This pamphlet gives the details of its construction and operation and is illustrated with numerous photographs.

PLANING MACHINES.—The Newton Machine Tool Works, Inc., Philadelphia, Pa., has recently issued Catalog No. 50, illustrating and describing the company's line of rotary planing machines. The catalog contains illustrations showing the various machines made by the company and gives specifications and general dimensions.

ACETYLENE.—The Searchlight Company, Chicago, has issued a pamphlet entitled "The Searchlight Treatise on Acetylene." It contains 12 pages, briefly describing the development of the use of the oxy-acetylene process for welding and cutting and discusses at some length the commercializing of the gases, in which the method of preparing, purifying and handling acetylene in cylinders is considered. There is also a brief discussion regarding the use of acetylene generated by small generators at the plant vs. the cylinder acetylene.

BOILERS.—The Harrison Safety Boiler Works, Philadelphia, Pa., has recently issued a 68-page catalog entitled "Finding and Stopping of Waste in Modern Boiler Rooms." The book treats of the value of feed water and condensate meters as aids in the management of power plants and it is shown how with a feed water meter one can ascertain the results of various factors, such as grade of fuel, grates, methods of firing, air leaks, control of draft, condition of gas passages, scale and soot on boiler tubes, radiation, etc. The point is made that the use of records which may be obtained with the meters arouses the ambition and spirit of emulation of the men, and makes it possible to reward special skill or attention to duty, as by bonuses or promotions. A section of the book also treats of the Cochrane metering heater (combined open feed water heater and hot water heater) with its several modifications. The Cochrane flow record for use in connection with V-notch weirs and a new type of meter working on the volumetric principle are also described. The book is well illustrated and attractively gotten up.

Railway Construction

ALASKA VALLEY.—Incorporated in North Carolina with $150,000 capital to build from Bryson City, N. C., on the Southern Railway to the falls of Alaska creek, 12 miles. The headquarters of the company are at Bryson City. Arthur Brooks is said to be interested.

CALIFORNIA SOUTHERN.—Construction work is now under way on the section from Red Hill Station, Cal., to Blythe, 27 miles. The Blythe Construction Company, of Blythe Junction and Los Angeles, Cal., also G. W. Grayson, of Blythe Junction, are the contractors. (May 7, p. 993.)

CHICAGO, WEATHERFORD & GULF.—A charter has been filed in Texas to build a railroad from Gainesville, Tex., south via Weatherford and Granbury, to Waco, about 200 miles. The company has a capital of $250,000, and the principal office is at Weatherford. W. D. Stratton, president; D. L. Decker, vice-president and general manager, both of Middleton, N. Y.; H. L. Moseley, vice-president; G. A. Holland, treasurer; T. R. Erwin, secretary, Weatherford.

CURTIS BAY RAILROAD.—Application to build and operate a railroad at Curtis Bay in Anne Arundel county, Md., has been made to the Public Service Commission of Maryland. The company was incorporated in March of this year with $10,000 capital, and plans to build a railway from the plant of the Davison Chemical Company to Hawkins Point The company also asks permission to construct wharves, piers, etc. In the application filed it is pointed out that the road will not conflict with any existing road, and that the conditions in that section demand the construction of a line of this kind, not only for commercial reasons, but to meet the passenger traffic needs of hundreds of workmen employed in the vicinity. C. Wilbur Miller, president of the Davison Chemical Company; J. Luntz, P. J. Peters, J. F. Gillespie and E. Miller are incorporators.

ELKIN & ALLEGHENY.—Construction work is now under way between Doughton, N. C., and Sparta. The company is carrying out the work with its own forces. Four miles have been graded, but track laying has not yet been started. The company now operates a 15-mile line from Elkin, N. C., northwest via Doughton to Veneer.

GRAND TRUNK PACIFIC.—Grading work on the Grand Trunk Pacific Branch Lines Company's Prince Albert branch has been completed into Prince Albert, Sask., but track has only been laid to St. Louis, on the north shore of the Saskatchewan river, which is 25 miles from Prince Albert. Grading work has also been finished on the Harte-Brandon branch, 26 miles, but track laying has not yet been started.

GULF, SABINE & RED RIVER.—The construction of a 35-mile extension has been decided upon, it is said, by Lutcher & Moore, lumber manufacturers of Orange, Texas, the owners of this line. The proposed route is from Starks, La., north to Merryville. The extension will traverse a rich territory of the Sabine River valley, and will open up timberland. The company now operates a line from Niblett's Bluff, a few miles north of Orange, Tex., to Starks, La., where connection is made with the Kansas City Southern.

JACKSON & EASTERN.—Construction work is now under way from Union, Miss., west to Seabastopol, 14 miles. The work is being carried out by company forces. R. W. Harris, Meridian, Miss., may be addressed.

KANSAS SOUTHERN TRACTION.—Incorporated in Kansas with $100,000 capital and headquarters at Oswego. The plans call for building an electric line from Parsons, Kan., southwest to Coffeyville, also a line from Parsons southeast to Columbus, in all about 70 miles. The incorporators include: P. Stack, Parsons, Kan.; T. Ritzo and D. Conti, Kansas City, Mo.; J. W. Everett and J. M. Page, Topeka, Kan.

MONTREAL & SOUTHERN COUNTIES (ELECTRIC).—This company has finished work on the extension from St. Cesaire, Que., to Granby, 15 miles. One mile of the extension was built in 1914, and 14 miles in 1915. (July 2, p. 38.)

New York, Philadelphia & Norfolk.—This company now has under construction 7.54 miles of second track from Hallwood, Va., to Parksley.

Pacific & Idaho Northern.—This company, which now operates a line from New Meadows, Idaho, to Weiser, 89.7 miles, some years ago made surveys and reconnaissances from New Meadows north towards Grangeville or Lewiston, following generally the route of the Little Salmon and Big Salmon rivers. Governor Moses Alexander has been agitating the question of completing the gap between New Meadows and one of the points named above to provide rail connection between the northern and southern sections of Idaho. A commission was appointed by the governor, which has already made a favorable preliminary report. It is understood that capital can be secured to build the line; the construction work will be expensive. The Pacific & Idaho Northern has not yet done any work north of New Meadows except to make surveys. The company has filed its right of way through government land as far north as Riggins, at the junction of the Little and Big Salmon rivers, 35 miles north of New Meadows, at which point the P. & I. N. surveys intersect the Gilmore & Pittsburgh surveys from the present western terminus of that road at Salmon City, down the Big Salmon river and Snake river to Lewiston.

Palatine, Lake Zurich & Wauconda.—This company, which operates a line from Palatine, Ill., northwest to Wauconda, 15 miles, has surveys made for an extension from Wauconda to Fox Lake, 10.5 miles. During 1915 work was finished on one-half mile of side tracks.

Philadelphia Roads.—The lowest bid for the steel superstructure of the Frankford elevated line extension from Unity street to Dyre street, Philadelphia, Pa., was submitted by the American Bridge Company. This company offered to carry out the work for $249,000. (December 10, p. 1113.)

Richmond, Rappahannock & Northern.—Conditional contracts have been let by this company for the construction of the new line from West Point, Va., northeast to Urbanna, 17 miles. The contract, it is understood, was let to Winston & Co., Richmond, Va. The promoters must make a first payment of $100,000 to the contractors before actual construction work will be started. The cost of construction and equipment of the line is estimated at $300,000. The project has the endorsement of the Richmond Chamber of Commerce and Retail Merchants' Association, who are co-operating in raising the necessary funds. (August 20, 1915, p. 369.)

Roanoke River.—This company, which now operates a 12-mile line from Townsville, N. C., east to Manson, contemplates building an extension from Townsville west to a connection with the Southern Railway, about 9 miles.

Southern Traction.—An officer is quoted as saying that definite action for building from Waco, Tex., south to Austin, thence to San Antonio, about 180 miles, will be taken within the next few months. The company owns and operates interurban lines between Dallas and Waco and between Dallas and Corsicana.

South Dakota Short Line.—This company, which was recently incorporated in South Dakota with $2,000,000 capital, plans to build a line either from Sioux Falls, S. D., northwest to Pierre, 200 miles, or from Mitchell to Pierre, 120 miles. G. W. Adams, president, Council Bluffs, Iowa. (October 1, p. 622.)

Valley & Siletz.—Work is now under way building an extension between Spalding Dam, Ore., and Siletz Basin, eight miles. The work is being carried out by company forces. (March 26, p. 721.)

Virginia-Blue Ridge.—This company is building an extension from Lowesville, Va., to Massies Mill, 9 miles. The Wuch Construction Company, Roanoke, Va., has the contract. Surveys are now being made for an extension from Massies Mill to Tyro, 3 miles. (August 13, p. 301.)

RAILWAY STRUCTURES

Two Harbors, Minn.—The Duluth & Iron Range will build a one-story car repair shop at Two Harbors. The building will have a steel frame and brick walls; it will be 275 ft. by 310 ft. and will cost $175,000. The date for opening bids for the work has not been set.

Railway Financial News

Buffalo & Susquehanna.—See Wellsville & Buffalo.

Chicago, Burlington & Quincy.—See Paducah & Illinois.

Chicago, Milwaukee & St. Paul.—Kuhn, Loeb & Co. and the National City Bank, both of New York, have bought from the Chicago, Milwaukee & St. Paul $2,856,000 general mortgage 4½ per cent bonds, the proceeds to be used to refund a like amount of Dakota & Great Southern first mortgage 5 per cent bonds maturing January 1, 1916.

The Wisconsin Railroad Commission has authorized the company to issue $48,176,650 4 per cent bonds to retire a like amount of 4 per cent 15-year European loan bonds of 1910. These European loan bonds were printed in French and largely held in France. They have been surrendered by the owners to the French government and sent to this country to raise money for the government.

Chicago, Rock Island & Pacific.—The receiver is to ask the court for authority to pay the interest coupons maturing January 1 on underlying bonds and to renew short term loans and receiver's certificates.

Elkin & Allegheny.—C. B. Penney, general manager, and M. W. Thompson have been appointed receivers.

Gulf, Mobile & Northern.—The state of Mississippi has issued issued a charter for this company, which is the new company taking over the New Orleans, Mobile & Chicago.

Lehigh Valley.—Samuel T. Bodine has been elected a member of the board of directors, succeeding Abram Nesbitt, resigned.

Missouri Pacific.—Federal Judge Elmer B. Adams has, at his own request, been relieved of the receivership affairs of the Missouri Pacific and Judge Sanborne, of the United States Circuit Court of Appeals, has assigned Judge William C. Hooke, of Leavenworth, Kan., to take over the Missouri Pacific receivership.

Nashville, Chattanooga & St. Louis.—See Paducah & Illinois.

New Orleans, Mobile & Chicago.—See Gulf, Mobile & Northern.

Paducah & Illinois.—Kean, Taylor & Co., the Union Trust Company, the Merchants Loan & Trust Company, all of Chicago; the Second Ward Savings Band, the First National Bank, both of Milwaukee; the Northwestern Trust Company, the St. Paul Commerce Trust Company, both of Kansas City; the Mercantile Trust Company, St. Louis, Mo., and James C. Wilson & Co., Louisville, Ky., have bought from the Paducah & Illinois $3,500,000 first mortgage 4½ per cent 40-year bonds. These bonds are guaranteed principal, interest and sinking fund by the Chicago, Burlington & Quincy and the Nashville, Chattanooga & St. Louis. The Paducah & Illinois is a subsidiary of these two companies and is building a double-track steel bridge over the Ohio river near Metropolis, Ill. The bridge is about 5,700 ft. long and will form the only direct connection between the Nashville, Chattanooga & St. Louis and the Chicago, Burlington & Quincy.

Pere Marquette.—Judge Tuttle, of the United States district court, has fixed April 5, 1916, as the date of sale with an upset price of $14,000,000 subject to underlying bonds.

Richmond, Fredericksburg & Potomac.—The directors, in accordance with the expressed desires of stockholders, have voted to issue a scrip dividend of 50 per cent. The state of Virginia owns about 18 per cent of the stock, which has been paying regular dividends of 9 per cent.

Wellsville & Buffalo.—This is the name of the new company which has applied to the New York Public Service Commission for a certificate of public convenience and necessity to operate the Buffalo & Susquehanna Railway, which it has taken over after reorganization.

Wheeling & Lake Erie.—For the third time the Wheeling & Lake Erie has been offered for sale. No bid was made.